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No. 2

Supreme Court, U.S.
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CLERK

IN THE
Supreme Court of the United States

October Term, 1986

SEATTLE MASTER BUILDERS ASSOCIATION, et al.,
Petitioners,

v.

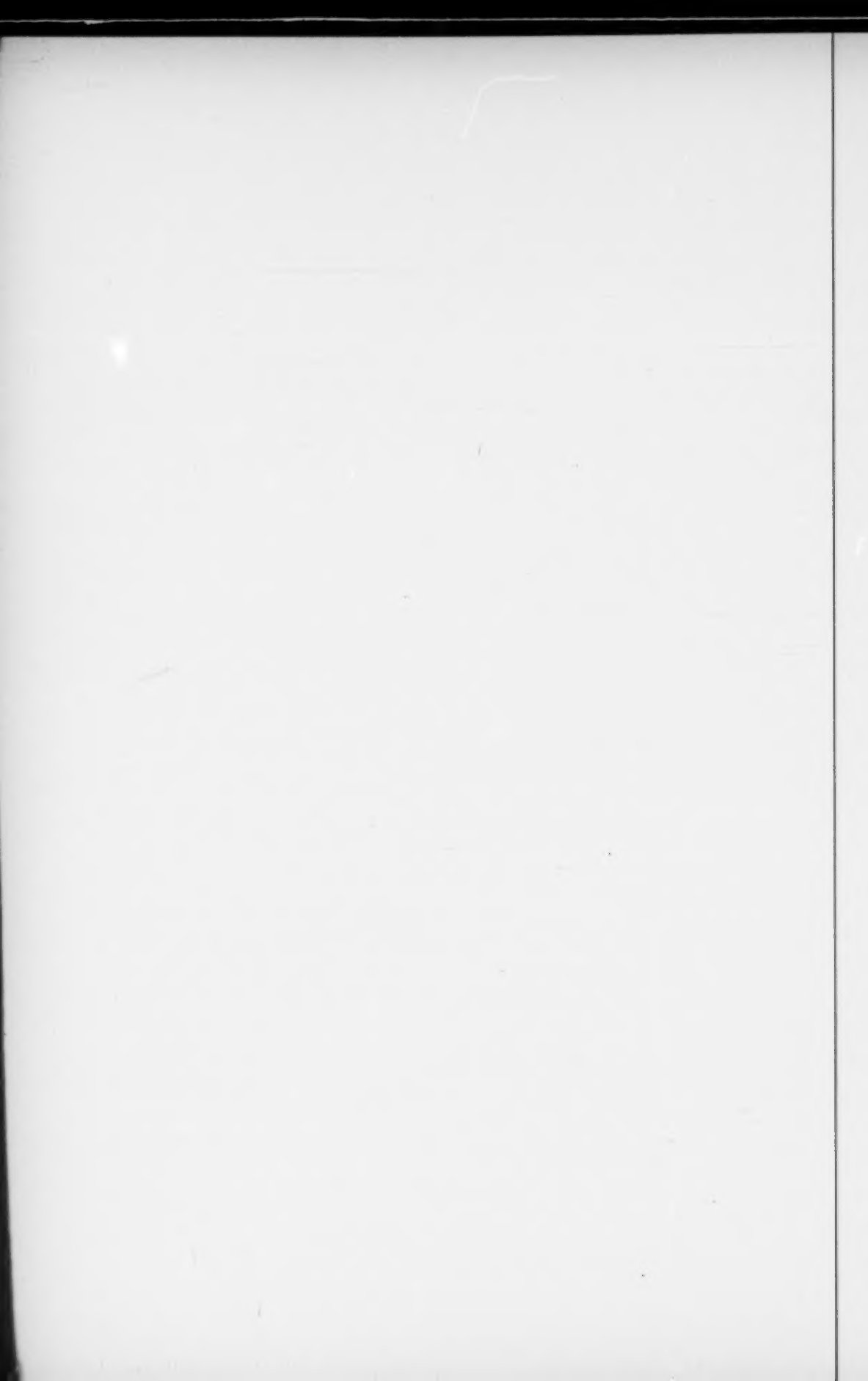
PACIFIC NORTHWEST ELECTRIC POWER
AND CONSERVATION PLANNING COUNCIL,
Respondent,

UNITED STATES OF AMERICA,
Intervenor-Respondent.

APPENDICES B THROUGH M (VOL. 1 OF 2) TO
PETITION FOR WRIT OF CERTIORARI TO THE
UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

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Second, renumber footnote 3 on page 10, line 16, as footnote 4.

APPENDIX B

UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

NO. 83-7585

SEATTLE MASTER BUILDERS ASSOCIATION;
HOMEBUILDERS ASSOCIATION OF SPOKANE,
INC.; NATIONAL WOODWORK MANUFACTURERS'
ASSOCIATION; FIR & HEMLOCK DOOR
ASSOCIATION; SHELTER DEVELOPMENT
CORPORATION; CLAIR W. DAINES, INC.;
CONNER DEVELOPMENT CO., INC.;
HOMEBUILDERS ASSOCIATION OF WASHINGTON
STATE,

Petitioners,

vs.

PACIFIC NORTHWEST ELECTRIC POWER AND
CONSERVATION PLANNING COUNCIL
(NORTHWEST POWER PLANNING COUNCIL),

Respondent,

and

UNITED STATES OF AMERICA,
Intervenor-Respondent.

ORDER

Judge Beezer's dissent is amended as
follows:

First, add a new footnote 3 at page
8, line 14, after "is diminished.", to
read as follows:

3/Indeed, the Framers expressly
rejected the idea that the Appoint-
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APPENDIX C

United States Constitution, Article I, Section 10, Clause iii ("Compacts Clause"):

No State shall, without the Consent of Congress, lay any Duty of Tonnage, keep Troops, or Ships of War in time of Peace, enter into any Agreement or Compact with another State, or with a foreign Power, or engage in War, unless actually invaded, or in such imminent Danger as will not admit of delay.



APPENDIX D

United States Constitution, Article II,
Section 2, Clause ii ("Apportionments
Clause"):

[The President] shall . . . nominate, and by and with the Advice and Consent of the Senate, shall appoint Ambassadors, other public Ministers and Consuls, Judges of the Supreme Court, and all other Officers of the United States, whose Appointments are not herein otherwise provided for and which shall be established by the Law: but the Congress may by Law vest Appointment of such inferior Officers as they think proper, in the President alone, in the Court of Law, or in the Heads of Department.

APPENDIX E

16 U.S.C. CHAPTER 12H - PACIFIC NORTHWEST ELECTRIC POWER PLANNING AND CONSERVATION ("The Act")

. . . .

§ 839. Congressional declaration of purpose

The purposes of this chapter, together with the provisions of other laws applicable to the Federal Columbia River Power System, are all intended to be construed in a consistent manner. Such purposes are also intended to be construed in a manner consistent with applicable environmental laws. Such purposes are:

. . . .

(3) to provide for the participation and consultation of the Pacific Northwest States, local governments, consumers, customers, users of the Columbia River System (including Federal and State fish and wildlife agencies and appropriate Indian tribes), and the public at large within the region in -

(A) the development of regional plans and programs related to energy conservation, renewable resources, other resources, and protecting, mitigating, and enhancing fish and wildlife resources,

(B) facilitating the orderly planning of the region's power system, and

(C) providing environmental quality;

§ 839a. Definitions

As used in this chapter, the term -

. . . .

(4)(A) "Cost-effective", when applied to any measure or resource referred to in this chapter, means that such measure or resource must be forecast -

(i) to be reliable and available within the time it is needed, and

(ii) to meet or reduce the electric power demand, as determined by the Council or the Administrator, as appropriate, of the consumers of the customers at an estimated incremental system cost no greater than that of the least-cost similarly reliable and available alternative measure or resource, or any combination thereof.

(B) For purposes of this paragraph, the term "system cost" means an estimate of all direct costs of a measure or resource over its effective life, including, if applicable, the cost of distribution and transmission to the consumer and, among other factors, waste disposal costs, end-of-cycle costs, and fuel costs (including projected increases), and such quantifiable environmental costs and benefits as the Administrator determines, on the basis of a methodology developed by the Council as part of the plan, or in the absence of the plan by

the Administrator, are directly attributable to such measure or resource.

(C) In determining the amount of power that a conservation measure or other resource may be expected to save or to produce, the Council or the Administrator, as the case may be, shall take into account projected realization factors and plant factors, including appropriate historical experience with similar measures or resources.

(D) For purposes of this paragraph, the "estimated incremental system cost" of any conservation measure or resource shall not be treated as greater than that of any nonconservation measure or resource unless the incremental system cost of such conservation measure or resource is in excess of 110 per centum of the incremental system cost of the nonconservation measure or resource.

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(12) "Major resource" means any resource that -

(A) has a planned capability greater than fifty average megawatts, and

(B) if acquired by the Administrator, is acquired for a period of more than five years.

Such term does not include any resource acquired pursuant to section 838i(b)(6) of this title.

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(19) "Resource" means -

(A) electric power, including the actual or planned electric power capability of generating facilities, or

(B) actual or planned load reduction resulting from direct application of a renewable energy resource by a consumer, or from a conservation measure.

§ 839b. Regional planning and participation

(a) Pacific Northwest Electric Power and Conservation Planning Council; establishment and operation as regional agency

(1) The purposes of this section are to provide for the prompt establishment and effective operation of the Pacific Northwest Electric Power and Conservation Planning Council, to further the purposes of this chapter by the Council promptly preparing and adopting (A) a regional conservation and electric power plan and (B) a program to protect, mitigate, and enhance fish and wildlife, and to otherwise expeditiously and effectively carry out the Council's responsibilities and functions under this chapter.

(2) To achieve such purposes and facilitate cooperation among the States of Idaho, Montana, Oregon, and Washington, and with the Bonneville Power Administration, the consent of Congress is given for an agreement described in this paragraph and not in conflict with this chapter, pursuant to which -

(A) there shall be established a regional agency known as the "Pacific Northwest Electric Power and Conservation Planning Council" which (i) shall have its offices in the Pacific Northwest, (ii) shall carry out its functions and responsibilities in accordance with the provisions of this chapter, (iii) shall continue in force and effect in accordance with the provisions of this chapter, and (iv) except as otherwise provided in this chapter, shall not be considered an agency or instrumentality of the United States for the purpose of any Federal law; and

(B) two persons from each State may be appointed, subject to the applicable laws of each such State, to undertake the functions and duties of members of the Council

The State may fill any vacancy occurring prior to the expiration of the term of any member. The appointment of six

initial members, subject to applicable State law, by June 30, 1981, by at least three of such States shall constitute an agreement by the States establishing the Council and such agreement is hereby consented to by the Congress. Upon request of the Governors of two of the States, the Secretary shall extend the June 30, 1981, date for six additional months to provide more time for the States to make such appointments.

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(d) Regional conservation and
electric power plan

(1) Within two years after the Council is established and the members are appointed pursuant to subsection (a) or (b) of this section, the Council shall prepare, adopt, and promptly transmit to the Administrator a regional conservation and electric power plan. The adopted plan, or any portion thereof, may be amended from time to time, and shall be

reveiwed by the Council not less frequently than once every five years. Prior to such adoption, public hearings shall be held in each Council member's State on the plan or substantial, nontechnical amendments to the plan proposed by the Council for adoption. A public hearing shall also be held in any other State of the region on the plan or amendments thereto, if the Council determines that the plan or amendments would likely have a substantial impact on that State in terms of major resources which may be developed in that State and which the Administrator may seek to acquire. Action of the Council under this subsection concerning such hearings shall be subject to section 553 of Title 5 and such procedure as the Council shall adopt.

(2) Following adoption of the plan and any amendment thereto, all actions of the Administrator pursuant to section 839d

of this title shall be consistent with the plan and any amendment thereto, except as otherwise specifically provided in this chapter.

. . . .

(f) Model conservation standards;
surcharges

(1) Model conservation standards to be included in the plan shall include, but not be limited to, standards applicable to (A) new and existing structures, (B) utility, customer, and governmental conservation programs, and (C) other consumer actions for achieving conservation. Model conservation standards shall reflect geographic and climatic differences within the region and other appropriate considerations, and shall be designed to produce all power savings that are cost-effective for the region and economically feasible for consumers, taking into account financial assistance made available to consumers under section

839d(a) of this title. These model conservation standards shall be adopted by the Council and included in the plan after consultation, in such manner as the Council deems appropriate, with the Administrator, States, and political subdivisions, customers of the Administrator, and the public.

(2) The Council by a majority vote of the members of the Council is authorized to recommend to the Administrator a surcharge and the Administrator may thereafter impose such a surcharge, in accordance with the methodology provided in the plan, on customers for those portions of their loads within the region that are within States or political subdivisions which have not, or on the Administrator's customers which have not, implemented conservation measures that achieve energy savings which the Administrator determines are comparable to those

which would be obtained under such standards. Such surcharges shall be established to recover such additional costs as the Administrator determines will be incurred because such projected energy savings attributable to such conservation measures have not been achieved, but in no case may such surcharges be less than 10 per centum or more than 50 per centum of the Administrator's applicable rates for such load or portion thereof.

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§ 839d. Conservation and resource acquisition

(a) Conservation measures; resources

(1) The Administrator shall acquire such resources through conservation, implement all such conservation measures, and acquire such renewable resources which are installed by a residential or small commercial consumer to reduce load, as the Administrator determines are consistent with the plan, or if no plan is in effect

with the criteria of section 839b(e)(1) of this title and the considerations of section 839b(e)(2) of this title and, in the case of major resources, in accordance with subsection (c) of this section. Such conservation measures and such resources may include, but are not limited to -

(A) loans and grants to consumers for insulation or weatherization, increased system efficiency, and waste energy recovery by direct application,

(B) technical and financial assistance to, and other cooperation with, the Administrator's customers and governmental authorities to encourage maximum cost-effective voluntary conservation and the attainment of any cost-effective conservation objectives adopted by individual States or subdivisions thereof,

(C) aiding the administrator's customers and governmental authorities in implementing model conservation standards adopted pursuant to section 839b(f) of this title, and

(D) conducting demonstration projects to determine the cost effectiveness of conservation measures and direct application of renewable energy resources.

(2) In addition to acquiring electric power pursuant to section 839c(c) of this title, or on a short-term basis pursuant to section 11(b)(6)(i) of the Federal

Columbia River Transmission System Act [16 U.S.C.A. § 838i(b)(6)(i)], the Administrator shall acquire, in accordance with this section, sufficient resources -

(A) to meet his contractual obligations that remain after taking into account planned savings from measures provided for in paragraph (1) of this subsection, and

(B) to assist in meeting the requirements of section 839b(h) of this title.

The Administrator shall acquire such resources without considering restrictions which may apply pursuant to section 839c(b) of this title.

(b) Acquisition of resources

(1) Except as specifically provided in this section, acquisition of resources under this chapter shall be consistent with the plan, as determined by the Administrator.

(2) The Administrator may acquire resources (other than major resources) under this chapter which are not consistent with the plan, but which are determined by the Administrator to be consis-

tent with the criteria of section 839b(e) (1) of this title and the considerations of section 839b(e)(2) of this title.

. . . .

(5) Notwithstanding any acquisition of resources pursuant to this section, the Administrator shall not reduce his efforts to achieve conservation and to acquire renewable resources installed by a residential or small commercial consumer to reduce load, pursuant to subsection (a)(1) of this section.

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§839f. Administrative provisions

. . . .

(e) Judicial review; suits

(1) For purposes of sections 701 through 706 of Title 5, the following actions shall be final actions subject to judicial review -

(A) adoption of the plan or amendments thereto by the Council under section 839b of this title, adoption of the program by the Council, and any determination by the Council under section 839b(h) of this title;

(B) sales, exchanges, and purchases of electric power under section 839c of this title;

(C) the Administrator's acquisition of resources under section 839d of this title;

(D) implementation of conservation measures under section 839d of this title;

(E) execution of contracts for assistance to sponsors under section 839d(f) of this title;

(F) granting of credits under section 839d(h) of this title;

(G) final rate determinations under section 839e of this title; and

(H) any rule prescribed by the Administrator under section 839e(M)(2) of this title.

(2) The record upon review of such final actions shall be limited to the administrative record compiled in accordance with this chapter. The scope of review of such actions without a hearing or after a hearing shall be governed by section 706 of Title 5, except that final determinations regarding rates under section 839e of this title shall be supported by substantial evidence in the rulemaking record required by section 839e(i) of this title considered as a

whole. The scope of review of an action under section 839d(c) of this title shall be governed by section 706 of Title 5. Nothing in this section shall be construed to require a hearing pursuant to section 554, 556, or 557 of Title 5.

(3) Nothing in this section shall be construed to preclude judicial review of other final actions and decisions by the Council or Administrator.

(4) For purposes of this subsection -

(A) major resources shall be deemed to be acquired upon publication in the Federal Register pursuant to section 839d(c)(4)(B) of this title;

(B) resources, other than major resources, shall be deemed to be acquired upon execution of the contract therefor;

(C) conservation measures shall be deemed to be implemented upon execution of the contract or grant therefor; and

(D) rate determinations pursuant to section 839e of this title shall be deemed final upon confirmation and approval by the Federal Energy Regulatory Commission.

(5) Suits to challenge the constitutionality of this chapter, or any action thereunder, final actions and decisions

taken pursuant to this chapter by the Administrator or the Council, or the implementation of such final actions, whether brought pursuant to this chapter, the Bonneville Project Act [16 U.S.C.A. § 832 et seq.], the Act of August 31, 1964 (16 U.S.C. 837-837h), or the Federal Columbia River Transmission System Act (16 U.S.C. 838 and following), shall be filed in the United States court of appeals for the region. Such suits shall be filed within ninety days of the time such action or decision is deemed final, or, if notice of the action is required by this chapter to be published in the Federal Register, within ninety days from such notice, or be barred. In the case of a challenge of the plan or programs or amendments thereto, such suit shall be filed within sixty days after publication of a notice of such final action in the Federal Register. Such court shall have jurisdiction to hear

and determine any suit brought as provided in this section. The plan and program, as finally adopted or portions thereof, or amendments thereto, shall not thereafter be reviewable as a part of any other action under this chapter or any other law. Suits challenging any other actions under this chapter shall be filed in the appropriate court.

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§ 839g. Savings provisions

(a) Rights of States and political subdivisions of States

Nothing in this chapter shall be construed to affect or modify any right of any State or political subdivision thereof or electric utility to -

(1) determine retail electric rates, except as provided by section 839c(c)(3) of this title;

(2) develop and implement plans and programs for the conservation, development, and use of resources; or

(3) make energy facility siting decisions, including, but not limited to, determining the need for a particular facility, evaluating

alternative sites, and considering
alternative methods of meeting the
determined need.

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APPENDIX F

42 U.S.C. CHAPTER 55 - NATIONAL ENVIRON-
MENTAL POLICY ACT

. . . .

§ 4331. Congressional declaration of
national environmental policy

(a) The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster

and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.

(b) In order to carry out the policy set forth in this chapter, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may -

(1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

(2) assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;

(3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

(4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice;

(5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

(6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

(c) The Congress recognizes that each person should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.

§ 4332. Cooperation of agencies; reports; availability of information; recommendations; international and national coordination of efforts

The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted

and administered in accordance with the policies set forth in this chapter, and
(2) all agencies of the Federal Government shall -

(A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment;

(B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by subchapter II of this chapter, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision-making along with economic and technical considerations;

(C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on -

(i) the environmental impact of the proposed action,

(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,

(iii) alternatives to the proposed action

(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and

(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public as provided by section 552 of Title 5, and shall accompany the proposal through the existing agency review processes;

(D) Any detailed statement required under subparagraph (C) after January 1, 1970, for any major Federal action funded under a program of grants to States shall not be deemed to be legally insufficient solely by reason of having been prepared by a State agency or official, if:

- (i) The State agency or official has statewide jurisdiction and has the responsibility for such action,
- (ii) the responsible Federal official furnishes guidance and participates in such preparation,
- (iii) the responsible Federal official independently evaluates such statement prior to its approval and adoption, and
- (iv) after January 1, 1976, the responsible Federal official

provides early notification to, and solicits the views of, any other State or any Federal land management entity of any action or any alternative thereto which may have significant impacts upon such State or affected Federal land management entity and, if there is any disagreement on such impacts, prepares a written assessment of such impacts and views for incorporation into such detailed statement.

The procedures in this subparagraph shall not relieve the Federal official of his responsibilities for the scope, objectivity, and content of the entire statement or of any other responsibility under this chapter; and further, this subparagraph does not affect the legal sufficiency of statements prepared by state agencies with less than statewide jurisdiction.

(E) study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;

(F) recognize the worldwide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment;

(G) make available to States, counties, municipalities, institutions, and individuals, advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

(H) initiate and utilize ecological information in the planning and development of resource-oriented projects; and

(I) assist the Council on Environmental Quality established by subchapter II of this chapter.

APPENDIX G

WASHINGTON STATE ENVIRONMENTAL POLICY ACT

REVISED CODE OF WASHINGTON

§ 43.21C.020. Legislative recognitions - Declaration - Responsibility

(1) The legislature, recognizing that man depends on his biological and physical surroundings for food, shelter, and other needs, and for cultural enrichment as well; and recognizing further the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource utilization and exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the state of Washington, in cooperation with federal and local

governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to: (a) Foster and promote the general welfare; (b) to create and maintain conditions under which man and nature can exist in productive harmony; and (c) fulfill the social, economic, and other requirements of present and future generations of Washington citizens.

(2) In order to carry out the policy set forth in this chapter, it is the continuing responsibility of the state of Washington and all agencies of the state to use all practicable means, consistent with other essential considerations of state policy, to improve and coordinate plans, functions, programs, and resources to the end that the state and its citizens may:

(a) Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

(b) Assure for all people of Washington safe, healthful, productive, and esthetically and culturally pleasing surroundings;

(c) Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

(d) Preserve important historic, cultural, and natural aspects of our national heritage;

(e) Maintain, wherever possible, an environment which supports diversity and variety of individual choice;

(f) Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

(g) Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

(3) The legislature recognizes that each person has a fundamental and inalienable right to a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.

§ 43.21C.030. Guidelines for state agencies, local governments - Statements - Reports - Advice - Information

The legislature authorizes and directs that, to the fullest extent possible: (1) The policies, regulations, and laws of the state of Washington shall be interpreted and administered in accordance with the policies set forth in this chapter, and (2) all branches of government of this state, including state agencies, municipal and public corporations, and counties shall:

(a) Utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man's environment;

(b) Identify and develop methods and procedures, in consultation with the department of ecology and the ecological commission, which will insure that presently unquantified environmental amenities and values will be given appropriate consideration in decision making along with economic and technical considerations;

(c) Include in every recommendation or report on proposals for legislation and other major actions significantly affecting the quality of the environment, a detailed statement by the responsible official on:

(i) the environmental impact of the proposed action;

(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented;

(iii) alternatives to the proposed action;

(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and

(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented;

(d) Prior to making any detailed statement, the responsible official shall consult with and obtain the comments of any public agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments

and views of the the appropriate federal, province, state, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the governor, the department of ecology, the ecological commission, and the public, and shall accompany the proposal through the existing agency review processes;

(e) Study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;

(f) Recognize the world-wide and long-range character of environmental problems and, where consistent with state policy, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment;

(g) Make available to the federal government, other states, provinces of Canada, municipalities, institutions, and individuals, advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

(h) Initiate and utilize ecological information in the planning and development of natural resource-oriented projects.

§ 43.21C.031. Significant impacts

An environmental impact statement (the detailed statement required by RCW 43.21C.030(2)(c)) shall be prepared on proposals for legislation and other major actions having a probable significant, adverse environmental impact. Actions categorically exempt under RCW 43.21C.110-(1)(a) do not require environmental review or the preparation of an environmental impact statement under this chapter.

An environmental impact statement is required to analyze only those probable adverse environmental impacts which are significant. Beneficial environmental impacts may be discussed. The responsible official shall consult with agencies and the public to identify such impacts and limit the scope of an environmental impact statement. The subjects listed in RCW 43.21C.030(2)(c) need not be treated as separate sections of an environmental impact statement. Discussions of significant short-term and long-term environmental impacts, significant irrevocable commitments of natural resources, significant alternatives including mitigation measures, and significant environmental impacts which cannot be mitigated should be consolidated or included, as applicable, in those sections of an environmental impact statement where the responsible official decides they logically belong.



APPENDIX H

MONTANA ENVIRONMENTAL POLICY ACT

MONTANA CODE ANNOTATED

75-1-102. Purpose. The purpose of this chapter is to declare a state policy which will encourage productive and enjoyable harmony between man and his environment, to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man, to enrich the understanding of the ecological systems and natural resources important to the state, and to establish an environmental quality council.

75-1-103. Policy. (1) The legislature, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding

technological advances, and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the state of Montana, in cooperation with the federal government and local governments and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can coexist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Montanans.

(2) In order to carry out the policy set forth in this chapter, it is the continuing responsibility of the state of Montana to use all practicable means

consistent with other essential considerations of state policy to improve and coordinate state plans, functions, programs, and resources to the end that the state may:

(a) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

(b) assure for all Montanans safe, healthful, productive and aesthetically and culturally pleasing surroundings;

(c) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

(d) preserve important historic, cultural and natural aspects of our unique heritage and maintain, wherever possible, an environment which supports diversity and variety of individual choice;

(e) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

(f) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

(3) The legislature recognizes that each person shall be entitled to a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.

. . . .

75-1-201. General directions - environmental impact statements. (1)

The legislature authorizes and directs that, to the fullest extent possible:

(a) the policies, regulations, and laws of the state shall be interpreted and administered in accordance with the policies set forth in this chapter:

(b) all agencies of the state, except as provided in subsection (2), shall:

(i) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision-making which may have an impact on man's environment;

(ii) identify and develop methods and procedures which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations;

(iii) include in every recommendation or report on proposals for projects, programs, legislation, and other major actions of state government significantly

affecting the quality of the human environment, a detailed statement on:

(A) the environmental impact of the proposed action;

(B) any adverse environmental effects which cannot be avoided should the proposal be implemented;

(C) alternatives to the proposed action;

(D) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and

(E) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented;

(iv) study, develop, and describe appropriate alternatives to recommend courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;

(v) recognize the national and long-range character of environmental problems and, where consistent with the policies of the state, lend appropriate support to initiatives, resolutions, and programs designed to maximize national cooperation in anticipating and preventing a decline in the quality of mankind's world environment;

(vi) make available to counties, municipalities, institutions, and individuals advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

(vii) initiate and utilize ecological information in the planning and development of resource-oriented projects; and

(viii) assist the environmental quality council established by 5-16-101; and

(c) prior to making any detailed statement as provided in subsection (1) (b)(iii), the responsible state official shall consult with and obtain the comments of any state agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate state, federal, and local agencies which are authorized to develop and enforce environmental standards shall be made available to the governor, the environmental quality council, and the public and shall accompany the proposal through the existing agency review processes.

(2) The department of public service regulation, in the exercise of its regulatory authority over rates and charges of railroads, motor carriers, and public utilities, is exempt from the provisions of this chapter.

. . . .

APPENDIX I

IDAHO ENABLING LEGISLATION

IDAHO CODE

61-1201. Agreement for state participation in the Pacific Northwest Electric Power and Conservation Planning Council.-

The state of Idaho agrees to participate in the formation of the "Pacific Northwest Electric Power and Conservation Planning Council," created pursuant to the Pacific Northwest electric power planning and conservation act. Nothing in this agreement shall be construed to alter, diminish or abridge the rights of the state of Idaho and its citizens with respect to any water or water related right and those relating to the regulation of the energy industry.

. . . .

61-1203. Term of office of council members - Filling of vacancies.- (1)

Unless removed at the governor's pleasure, each member appointed to the council shall

serve for a term of three (3) years, except that, with respect to members initially appointed, the governor shall designate one (1) member to serve a term of two (2) years and one (1) member to serve a term of three (3) years. Absent removal by the governor, terms shall commence and end on January 15.

APPENDIX J

MONTANA ENABLING LEGISLATION

MONTANA CODE ANNOTATED

90-4-401. Agreement to pacific northwest electric power and conservation planning council. The state of Montana agrees through this part and through the appointment of persons as provided in this part to formation of and participation in the pacific northwest electric power and conservation planning council, hereafter referred to in this part as "the council", and to the performance of the functions and duties of the council as provided in the Pacific Northwest Electric Power Planning and Conservation Act (P.L. 96-501).

90-4-402. Appointment of council members by governor. (1) The governor shall appoint at the beginning of each gubernatorial term two persons to serve as members of the council as provided in P.L. 96-501.

(2) An appointment of a council member by the governor is subject to the confirmation of the senate, except that the governor may appoint a council member to assume office before the senate meets in its next regular session to consider the appointment. A member so appointed is vested with all the functions of the office upon assuming the office and is a de jure officer, notwithstanding the fact that the senate has not yet confirmed the appointment. If the senate does not confirm the appointment of a member, the governor shall make a new appointment.

(3) A council member serves at the pleasure of the governor. The governor may remove a council member at any time and appoint a new member to the office.

APPENDIX K

OREGON ENABLING LEGISLATION

OREGON REVISED STATUTES

469.800 Oregon participation in Pacific Northwest Electric Power and Conservation Planning Council. The State of Oregon agrees to participate in the formation of the Pacific Northwest Electric Power and Conservation Planning Council pursuant to the Pacific Northwest Electric Power Planning and Conservation Act of 1980. Public Law 96-501. Participation of the State of Oregon in the council is essential to assure adequate representation for the citizens of Oregon in decision making to achieve cost-effective energy conservation, to encourage the development of renewable energy resources, to establish a representative regional power planning process, to assure the Pacific Northwest region of an efficient and adequate power supply and to fulfill the other purposes stated in section 2 of Public Law 96-501.

APPENDIX L

WASHINGTON ENABLING LEGISLATION

REVISED CODE OF WASHINGTON

43.52A.010. State agreement to participate in Pacific Northwest Electric Power and Conservation Planning Council

The state of Washington agrees to participate in the Pacific Northwest Electric Power and Conservation Planning Council pursuant to the Pacific Northwest Electric Power Planning and Conservation Act.

43.52A.040. Terms of members - Vacancies - Residence of members

(1) Unless removed at the governor's pleasure, council members shall serve a term ending January 15 of the third year following appointment except that with respect to members initially appointed, the governor shall designate one member to serve a term ending January 15 of the second year following appointment. . . .

APPENDIX M

1983 NORTHWEST CONSERVATION AND ELECTRIC POWER PLAN VOLUME I

[i] Adopted Pursuant to the Pacific
Northwest Electric Power Planning and
Conservation Act of 1980 (P.L. 96-501)
April 27, 1983

[4-2] Summary of Results

The plan includes a range of four alternative forecasts of demand based on different plausible scenarios of the Northwest economy. When no conservation programs were included, the Council's alternative sets of assumptions about the regional economy resulted in demand forecasts ranging from an annual growth rate of 2.5 percent in the high growth forecast to 0.7 percent in the low growth forecast. Two intermediate growth forecasts, medium-high and medium-low, predict annual demand growth rates of 1.5 and 2.1 percent. The range covered by these forecasts is wide. By the year 2002, there is a difference of nearly 8,400 average megawatts of demand between the high and low forecasts. When transmission

and distribution losses are included, this implies that the high growth forecast would require 9,000 average megawatts more new resources than the low forecast.

Figure 4-3 displays the Council's four principal forecasts from 1981 to 2002. Table 4-1 shows the demand projections and the total percent increase of average retail prices of electricity adjusted for inflation. Satisfying each level of demand requires a combination of conservation resources to reduce the need for electricity and generating resources to produce electricity. The additional resources needed to meet the high growth forecast would increase the average price of electricity by 80 percent adjusted for inflation from 1981 levels. This means that the average prices expressed in 1980 dollars charged by investor-owned utilities and public agencies, weighted by their respective sales, would increase

from 2.0 cents per kilowatt-hour in 1981 to 3.6 cents in 2002. If regional demand for electricity turned out to be at the lower end of the range, prices would be only 2.1 cents per kilowatt-hour in 2002.

Dramatic price increases from 1981 through 1984, primarily caused by thermal construction costs that already have been incurred, are present in all four forecasts. The 1985 prices shown in figure 4-4 are all near 2.7 cents per kilowatt-hour. With inflation added, 1985 rates would be about 3.7 cents per kilowatt-hour. As illustrated in figure 4-4, price changes after 1985 differ greatly depending on the need for new resources. These patterns reflect the fact that new resources are far more expensive than existing resources.

The price projections shown in figure 4-4 assume the resources selected in this

plan, and therefore reflect the minimum cost of meeting either the high or low load forecast. A different mix of resources could increase the price projections. For example, if the conservation resource is not fully realized, the region will have to turn to more costly generating resources. If this happens, the prices that will occur will be significantly higher than these projections for both the high and low forecast.

Clearly, providing electricity for a high growth rate in the region is expensive. If the region's economy is indeed booming, it can well afford the additional expense, although fixed-income and low-income households [4-3] would be hurt by this increase in their cost of living. It would be a costly mistake, however, to commit to high growth resources if that level of growth failed to materialize.

The following sections describe the Council's forecasts and their underlying assumptions in more detail.

. . . .

[5-15] Because of the current surplus of firm electric energy, the large amount of conservation resource potentially available to the Northwest, and the extremely unlikely possibility that the demand under the high growth forecast will occur, the Council has not felt the need in the first plan to investigate taking risks (of empty reservoirs) with the hydropower system beyond the risks associated with current critical water planning. These issues will be investigated further in the future.

. . . .

[7-1] The key element in the Council's resource portfolio for meeting future energy needs is conservation. This chapter first describes present electric consumption for the region's residential,

commercial, industrial, and irrigated agricultural sectors. It then assesses potential conservation savings for each sector and identifies how much conservation from that sector is included in the Council's resource portfolio.

Conservation involves more efficient use of electricity. This means (a) ensuring that new houses and commercial and industrial facilities are more energy-efficient; (b) installing more efficient water heaters and appliances; and (c) finding more efficient ways to manufacture products, to perform industrial processes, or to move irrigation water into the fields.

Conservation also involves steps to make existing houses and buildings more energy-efficient by adding insulation in walls and ceilings, installing water heater blankets, and adding other cost-effective conservation measures.

If we could ignore cost, there is technology available to reduce our needs for electricity dramatically. The Council considered any conservation measure as technically achievable if it could improve the efficiency of electric use at a cost of 10 cents (or less) per kilowatt-hour. The Council's assessment of the portion of this technically achievable conservation that can be developed cost-effectively took into account four important factors.

First, the Act grants conservation a 10 percent cost advantage over other resources. This means that a conservation measure can cost 10 percent more than the next lowest-cost resource and still be cost-effective under the Act.

Second, conservation measures also reduce the need for additional transmission lines and other distribution facilities. From the regional perspective, when a conservation action reduces the

need for these facilities, it reduces the associated facilities costs by approximately 2.5 percent.

Third, conservation avoids the "line losses" that occur when electricity is transmitted over long distances. About 7.5 percent of the electricity generated at a power plant is "lost" in transmission to its ultimate point of use. Subsequently, any comparison between a generating resource and conservation must adjust for this fact. Therefore, for purposes of its cost-effectiveness analysis, the Council reduced conservation's cost by 7.5 percent. The combined effect of adjustments for the cost advantage provided by the Act, and transmission cost and line loss savings, is to reduce conservation's cost by 20 percent.

Finally, to assess accurately the amount of cost-effective conservation available, the administrative cost of

programs needed to secure conservation must be included. The Council reviewed current utility conservation programs and those operated by other agencies. This review indicated that conservation program administrative costs are in the range of 15 to 25 percent of the direct cost of measures for fully operational programs. The Council, in its cost-effectiveness evaluations of conservation, has assumed a 20 percent administrative cost.

The Council has established its cost-effectiveness limit at a levelized cost of 4 cents per kilowatt-hour in 1980 dollars. Conservation measures which have an installed cost in excess of this amount are less economically attractive than other new resources the region could acquire. This limit was established by comparing the levelized cost of conservation measures with the levelized cost of other similarly available and reliable resources.

In the Council's high growth forecast, it currently appears that the last resource to be acquired will be a coal plant with a levelized cost slightly above 4 cents per kilowatt-hour. Conservation measures which could displace this coal plant would be considered cost-effective if they were compatible with the existing power system. To assess this, the Council used its strategic planning model and the systems analysis model. Finally, in judging whether conservation was cost-effective, the Council considered its ability to limit the region's exposure to higher risk thermal resources which have long lead times and require large capital investments.

Although the amount of conservation available at 4.0 cents per kilowatt-hour is economically achievable, not all of these savings can be realized. Changes in consumer behavior and consumer resistance,

quality control, and unforeseen technical problems will prevent the region from developing 100 percent of this potential. However, the Council has decided that, using the wide assortment of incentives and regulatory measures the Act makes available, the region's electric consumers could be persuaded to install a large percentage of the economically achievable conservation. The amount of conservation included in the plan and referred to in the following discussions is the net savings the Council anticipates after taking into account all of these factors. The proportion considered realizable under the plan varies from 36 percent for residential appliances to nearly 100 percent for the industrial and irrigation sectors. In aggregate, the Council's plan, under the high growth forecast, calls for the development of approximately 75 percent of the conservation that can be

achievable at a cost equal to or less than 4.0 cents per kilowatt-hour.

The amount of technically and economically achievable conservation is directly related to the amount of energy used. This section describes the amount of electricity presently used in each sector, the amount that would be used if there were no conservation programs, and the savings made possible by the plan. A technical discussion of the Council's conservation assessment appears in Appendix K (Volume II, available on request).

The conservation savings identified in this chapter are higher than other projections made in the region. A major reason is that the analysis assumes the Council's high growth forecast which is based on record economic growth in the region. If one of the Council's lower growth forecasts should occur, fewer new buildings and new factories would be built. Less

total energy would be needed, and consequently less conservation could be saved.

[7-2] Any direct comparison of the Council's conservation assessment with those made by other organizations should take two other factors into account. The supply data used in the plan include all conservation without distinguishing between conservation put into place as a result of specific programs and conservation measures motivated by rising prices of electricity. These estimates are also based on the high penetration rates the Council's plan assumes for each conservation program.

The figures shown do not include any adjustment for line losses. All costs shown are for the direct cost of the measures and do not include program cost, transmission cost savings, or quantifiable environmental costs and benefits.

Residential SectorCurrent Use of Electricity

In 1981, the region's residential sector consumed an estimated 5,323 average megawatts of electricity. This represented approximately 34 percent of the region's total consumption. The two largest residential uses of electricity are space and water heating. Space heat consumption in 1981 was 1,650 average megawatts or 31 percent of the residential use. Electricity used for water heating represented an estimated 26 percent of the residential use, or 1,380 average megawatts. The remaining 2,300 average megawatts (43 percent) were consumed by lights and other appliances.

Potential and Planned Conservation

Council studies indicate significant cost-effective conservation potential in the residential sector. Under the Council's low and medium-low growth

forecasts, residential needs in the year 2002 could be accommodated without using more electricity than in 1981. Even the record population and economic growth rates envisioned by the Council's high growth forecast could double the number of residential customers yet require only one-third more electricity than in 1981.

Three-quarters of the currently identified residential conservation potential is available through more efficient space heating and water heating. The remainder would come from improvements in efficiency of major household appliances, such as refrigerators and freezers, and in lighting. The conservation potential for each of these uses of electricity is discussed in the following paragraphs.

Figure 7-1 shows estimated space heating savings available in existing residences at a cost between 1 and 10

cents per kilowatt-hour. These savings can be achieved through improving the insulation levels, adding storm windows, and reducing the air leakage in existing houses. Of the 770 megawatts of technically achievable space heating conservation shown in figure 7-1, the Council's plan calls for developing 520 megawatts at an average cost of 1.5 cents per kilowatt-hour by the year 2002. This assumes a 33 percent reduction in energy used for space heating.

The Act directs the Council to establish model conservation standards for new buildings. These standards must secure all the power savings that are cost-effective for the region. In addition, they must be economically feasible for consumers. Subsequently, in the development of its model standards for new residential buildings, the Council took into consideration such factors as

mortgage rates, increases in the initial cost of a house to pay for conservation measures, the present and future cost of electricity, and other consumer investment opportunities. To ensure that its assessment of economic feasibility was conservative, the Council deliberately excluded from its analysis the tax deductions a homeowner is permitted for interest paid on home mortgages. The Council also did not include in its calculations the fact that houses built to its model standard will require much smaller and, less expensive heating systems. If both of these factors were included, they would significantly reduce the cost of attaining the Council's standard.

[7-3] As is shown in figure 7-2, a consumer living in a house built to the Council's model standard would use 60 percent less electricity for space heating than in a house built to current codes. Although

a house built to the Council's model standard will have a slightly higher initial cost, over the life of the house the consumer will be economically better off than if living in a house built to current codes. If tax deductions for interest on the added cost of the mortgages and cost savings from smaller heating systems are considered, a consumer's first year combined payment for space heating and mortgage payments will be less than if they purchased a house built to current codes. Figure 7-3 depicts the effects of interest deductions and heating system cost savings for a house built in Seattle or Portland. [7-4] The Council's plan calls for implementing these model conservation standards by January 1, 1986. Figure 7-4 shows the space heating conservation potential in new residences under the Council's high growth forecast. As is shown in this

figure, these model standards could save 880 megawatts by the year 2002. The average cost of these savings is less than 2.0 cents per kilowatt-hour.

. . . .

[9-2] Conservation is not likely to harm fish and wildlife. In fact, by reducing the use of fossil fuels, conservation will benefit fish and wildlife by avoiding unnecessary air and water pollution, transmission lines, mining, habitat interference or destruction, and water use. However, the Council is concerned about the potential indoor air quality impacts of weatherization unless mitigation measures are employed. The Council study noted that residential weatherization could reduce ventilation and cause harmful concentrations of various pollutants from space heating equipment, insulation, and building materials. These pollutants included formaldehyde from particle board and some insulation, and

radioactive emissions from masonry and concrete buildings. The report noted, however, that health levels for these pollutants have not yet been established.

The Council decided that heat exchangers could adequately mitigate these air quality impacts in that they provide adequate ventilation without sacrificing much heat. The Council's model conservation standards include an air-to-air heat exchanger if the house does not meet Bonneville's exemption criteria for air-tightening measures. With this mitigation, the Council believes that conservation is attractive from an environmental perspective.

. . . .

CHAPTER 10 Two-Year Action Plan

[10-1] This chapter describes the actions that Bonneville, the Council, and others will take over the next two years. These actions will enable Bonneville to be in a position to acquire the most cost-effec-

tive resources throughout the twenty years of this plan.

The Council has concluded that this two-year plan should focus on enhancing the region's capability to (a) implement conservation, (b) develop smaller, more dispersed renewable resources, and (c) shorten the lead time for the siting, licensing, and construction of generating plants. To accomplish those goals, Bonneville must support programs to acquire cost-effective conservation from all major consumer groups (residential, commercial, governmental, industrial, and agricultural). While the rate of conservation acquisitions must reflect the need for power in the region, the development of the capability to acquire conservation cannot wait. Bonneville must be ready to respond on short notice with conservation programs and resources if power demands increase. Currently, Bonneville and the

region's utilities have limited capability to implement conservation programs outside the residential sector. Bonneville must also begin developing resource options. This includes completing the planning and regulatory activities on certain resources and providing services to facilitate the early development of resources that might otherwise be lost to the region, such as cogeneration. Finally, Bonneville must conduct research, development, and demonstration projects to improve the information on which future resource decisions will be made.

It is not possible to forecast the precise resources that will be most cost-effective over the next twenty years. Resources currently projected to serve an unlikely, high demand growth may ultimately be displaced by new technologies and other resources that become more cost-effective, or may not be needed

because high demand growth does not materialize. To respond to changes in demand growth, in available resources, and in resource costs, the Council will review this plan every two years. This two-year process allows the Council to provide much more detail in its conservation program and resource acquisition plan for the beginning of the twenty-year planning period. General guidelines for resource acquisitions appropriate to the later years are inadequate during the early years when Bonneville must start implementing specific conservation programs and acquiring resources.

As described in previous chapters, this plan forecasts regional electric power demands for the twenty-year period over four separate demand growth conditions: low, medium-low, medium-high, and high. The actions in this chapter will develop conservation programs and resource

options that are capable of meeting all demand growth conditions.

[10-3] Figure 10-1 contains a summary of the actions in this two-year plan.

These actions are designed to maintain or improve Bonneville's ability to acquire conservation and other resources when they are needed. Because of the current surplus of power, this two-year plan does not include the acquisition of any conservation or other resource solely for the purpose of acquiring power.

The Council has considered the financial effect these conservation programs may have on Bonneville and the region's ratepayers. The conservation programs are expected to add only 3/100 of a cent per kilowatt-hour (1980 dollars) to the electric rates of consumers over the two-year period. Figure 10-2 illustrates the approximate relationship of the costs of these conservation programs to the

other costs that make up Bonneville's budget.

The Council anticipates that this two-year plan will have only minimal environmental impacts. The major actions over the next two years involve conservation, the most environmentally benign energy resource. To deal with the potential indoor air quality effects associated with weatherization, the Council's model conservation standards include an infiltration package designed to increase ventilation in houses with potential air quality problems. Moreover [sic], conservation measures will create a significant environmental benefit by helping to reduce the need for additional generation of electricity from less environmentally desirable resources. This two-year plan also calls for acquiring options on several hydropower sites in order to test the feasibility of options. The actual

development of these sites could result in some environmental and fish and wildlife impacts. The provisions of the Council's fish and wildlife program covering the Columbia River Basin and this plan's conditions for future hydropower development, along with the site-ranking study of this two-year plan, are expected to minimize those impacts. Other actions in this plan are of a demonstration nature and, as such, are undertaken in part to develop a better understanding of environmental effects.

The Council has determined that the actions in this two-year plan are cost-effective, prudent, and necessary for Bonneville to acquire the lowest cost resources consistent with the priorities, considerations, and other requirements of the Northwest Power Act.

Section 4(d)(2) of the Act provides that all conservation and resource acqui-

sitions by Bonneville "shall" be consistent with this plan, except as otherwise specifically provided in the Act. Section 6 of the Act, dealing with Bonneville resource acquisitions, states:

"(b)(1) Except as specifically provided in this section, acquisition of resources under this Act shall be consistent with the plan, as determined by the Administrator.

(2) The Administrator may acquire resources (other than major resources) under this Act which are not consistent with the plan, but which are determined by the Administrator to be consistent with the criteria of section 4(e)(1) and the considerations of section 4(e)(2) of this Act.

Any major resource acquisition is subject to review by the Council and a Council determination of consistency or inconsistency with this plan. A major resource is a resource with a planned capability greater than 50 average megawatts that is acquired for a period of more than five years.

The Council has used the word "shall" in this two-year action plan, when refer-

ring to actions to be carried out by Bonneville, to express the Council's expectation tha [sic] these actions can and should be implemented. It is the sense of the Council that these actions must be taken now for Bonneville to be able to acquire the lowest cost mix of resources over the next twenty years. The Council will consider Bonneville's record in implementing these actions as a part of any Council proceedings under section 6(c)(2) of the Act, regarding the consistency of major resource proposals with this plan. If significant changes in circumstances occur, this two-year plan can be revised at any time by Council action.

To ensure proper coordination in the implementation of these actions, the Council intends that all Bonneville actions in this two-year plan shall be taken in consultation with the Council.

In addition, the Council requests that by August 1, 1983 Bonneville provide the Council with a schedule and work plan for Bonneville's responsibilities under this chapter.

[10-4] Cost-Effectiveness

In ranking conservation and other resources for this two-year plan, the Council gave priority to resources it determined to be cost-effective. Cost-effectiveness was determined by employing the strategic planning model to identify resources that will meet demands at the lowest cost. The resources selected by use of the strategic planning model were further evaluated by use of the system analysis model. This model simulates the actual operation of the Northwest power system to determine the compatibility of resources with the existing regional power system, including the sale of electricity outside the region. The seasonal characteristics of the resources, their compat-

ibility with the existing power system, their capital commitments and construction periods, and their effects on the environment and fish and wildlife were considered in determining cost-effectiveness. Other considerations affecting the decisions in this two-year plan included the value of maintaining existing programs, the need to acquire certain resources when the opportunities become available, and the need to provide programs to ensure conservation as an available, short-lead-time resource.

Cost-effectiveness is in part a function of the pace and level of new resource development. For instance, when a house is weatherized, a decision must be made as to what measures should be installed. Should a measure that costs 3.8 cents per kilowatt hour be installed? If so, should the next most expensive measure, at 4.2 cents per kilowatt-hour, also be installed? If the Council had

perfect knowledge of the future, the solution would be relatively simple; all measures would be installed that do not exceed a levelized life cycle cost of the most expensive resource planned for acquisition. Because the Council cannot determine what resources might be needed, the Council must set this cost-effectiveness limit with imperfect knowledge.

The Council has determined that for purposes of these conservation programs, all measures that have an installed cost at or below 4.0 cents per kilowatt-hour are cost-effective to the region and should be installed. This 4.0 cents per kilowatt-hour limit was selected based upon the cost-effectiveness studies described above, which included comparative cost of other resources. It represents a level of conservation investment that, in the Council's analysis, is cheaper than any thermal power plant that may be needed during the twenty-year

planning period. The Council estimates that the average cost of the conservation programs will be 1.8 cents per kilowatt-hour.

If a cost-effectiveness figure lower than 4.0 cents per kilowatt-hour had been selected and less conservation were acquired, the region would be foregoing cost-effective opportunities for conservation; if demand was to grow fast enough, the region would later have to acquire a more expensive thermal plant in place of the lost conservation. On the other hand, if the Council had selected a higher cost-effectiveness figure, the region would be purchasing conservation that would be more expensive than thermal resources in this plan. The Council will be re-evaluating this cost-effectiveness limit as the extent of future demand growth becomes more clear.

All costs in this two-year action plan, including the regional cost-effec-

tiveness level of 4.0 cents per kilowatt-hour, are levelized life-cycle costs expressed in 1980 dollars. Levelized life-cycle costs were determined using a 3 percent real discount rate and conventional levelizing methods. (See Appendix K, Volume II, available on request, for specific procedures and assumptions.) For the purpose of determining the cost-effectiveness of conservation, the costs of administering conservation programs were included. Conservation also receives benefits from not having transmission and distribution costs and line losses and from the 10 percent cost advantage included in the Act.

Transition Resources

Chapter 5 explains that the cost-effectiveness of resources was determined based upon all costs borne by the region's ratepayers, rather than only those costs borne by Bonneville. Viewing resource costs from a regional ratepayer perspec-

tive requires special consideration of so called "transition plants," those resources now built or under construction that were not used to meet regional demand in the year prior to the enactment of the Act. Transition plants (such as Boardman, Valmy 1 and 2, Colstrip 3 and 4, and the privately owned share of WPPSS 3) were assumed in this plan to be completed and to be available to meet regional demand. They present a problem because their incremental costs, the costs to complete and operate them, are lower from the viewpoint of the regional ratepayers as a whole than their likely costs to Bonneville if they were to be acquired. A transition plant might be ranked as very cost-effective from the regional ratepayers' perspective but not cost-effective at all from Bonneville's perspective. Use of the regional ratepayers perspective might cause the apparent anomaly of Bonne-

ville's having to acquire a relatively expensive transition plant when conservation or other resources that would cost Bonneville less might be available. (The Council has found that even on a "cost to complete" basis WPPSS 4 and 5 would not be the preferred thermal resources for meeting high regional demand growth, if a decision had to be made now. Otherwise, the Council has assumed that all other resources under active construction in the year prior to the passage of the Northwest Power Act will be completed.

Acquisition of a major resource by Bonneville requires that the acquisition be consistent with this plan, with the Council reviewing Bonneville's decision and determining consistency. Necessarily, the decision on acquisition of a specific resource involves more than the decision to include generic resources in the plan. For instance, while the Council

gave due consideration to environmental and fish and wildlife concerns to the extent practicable when including resources in the plan, the acquisition decision will require such consideration on a site-specific basis. Clearly, ~~site-specific~~ information is not available at the time of planning. The Council expects to take a detailed look at all the consequences of any proposed acquisition when determining consistency.

Since Bonneville will not be needing any additional resources in the immediate future, and there is little danger that the major transition plants which are complete or near completion will be lost to the region after the surplus is over, the Council believes there currently is no need to resolve the treatment of transition plants.

[10-5] When additional demands are placed on Bonneville and one or several of the

transition plants are offered for acquisition, the Council anticipates that acquisition by Bonneville of a transition plant would be appropriate under the following conditions:

The plant is included in this plan as being necessary to meet regional loads;

The acquisition price does not exceed the fully allocated cost of the plant;

The region does not experience significant additional environmental costs from the acquisition; and

The acquisition would result in net benefits to the region through greater reliability, lower total regional financing costs, reduced environmental costs, or other factors.

These conditions should be evaluated at the time of acquisition.

Conservation Program

As explained under Cost-Effectiveness, the Council has determined that conservation investments are cost-effective to the region if the installed cost of any measure does not exceed 4.0 cents per

kilowatt-hour saved. The Council also has determined that it is cost-effective for Bonneville to continue its existing conservation programs (modified as provided in this plan), despite the current surplus. The region must not lose the benefits of investments made to date or lose the ability to accelerate conservation programs when demand begins to grow. The effectiveness of conservation programs depends upon the involvement of all 8 million consumers of electricity in the Northwest. A program involving so many people must not be subjected to repeated starts and stops in response to short-term power resource conditions. Conservation is unique in the ability it offers to adjust to the pace of resource acquisition that is needed. Conservation can serve that function, however, only if programs are developed, tested, and maintained throughout the planning period.

Table 10-1 provides the two-year (1985) five-year (1988), and twenty-year (2002) [10-6] conservation targets for each of the Council's four growth forecasts.

This table reveals that depending upon the rate of economic growth, the Council forecasts that the region should acquire between 660 and 4,790 megawatts of conservation by the year 2002 (in the low growth forecast, conservation programs and model conservation standards would add approximately 400 megawatts more than the estimate of regional needs over the twenty-year period). During the next two years the residential sector conservation provides approximately 50 percent of these savings, the commercial sector 25 percent, the governmental sector 5 percent, the industrial sector 10 percent and the agricultural sector 10 percent (see figure 10-3). Bonneville should diversify its conservation efforts to develop capability

in all sectors. The pace of these programs has been designed to enhance the region's ability to finance, develop, test, and implement new programs that serve all sectors, while taking the current surplus into account.

The conservation programs described in this chapter address problems that have hindered conservation efforts during the past decade. The Council believes the plan's conservation programs must be ambitious if conservation is to fulfill the role assigned to it by Congress. The Council will monitor these programs closely to ensure that the lessons learned can be translated into revisions to the plan and can result in improved confidence regarding the reliability of the region's "conservation resource."

The general aim of the Council's conservation programs is to build the capability of the region's conservation

system to ensure that, as the current power surplus diminishes, Bonneville, utilities, state and local governments, and the private sector will be able to acquire cost-effective conservation at a pace sufficient to meet the Council's long-run conservation targets. This will require the development and implementation of new conservation programs as well as the modification of existing programs. In addition to bolstering the region's conservation system, the programs are designed to promote efficiency, diversity, competition, and equitable distribution in the provision of conservation services.

Bonneville's basic role in this overall scheme is to provide financial assistance for conservation improvements that are cost-effective for the region. To guarantee that such regionally financed improvements are accomplished efficiently and effectively, the Council's program

includes requirements designed to avoid repeated retrofits of the same building, to ensure quality in workmanship, and to improve the skill and accuracy of those individuals who determine which conservation measures are cost-effective for a specific building. In addition, the programs define a number of actions to improve the operation of the market for conservation services and include research and demonstration projects to improve information about indoor air quality, solar space and water heating, heat pump water heaters, and other matters of interest to the region's consumers.

References are made in this two-year action plan to the implementation of certain programs "throughout the region." Specifically, these programs relate to (a) reimbursing code enforcement agencies for certain incremental costs associated with the model conservation standards, (b)

providing educational programs regarding the model conservation standards, and (c) providing consistent procedures for certifying compliance with the model conservation standards. The Council intends that funding for these programs be provided regardless of the status of local utility contracts with Bonneville and the specifics of local government and utility boundaries. The Council made this decision because (a) utilities that are not currently placing their demands on Bonneville could do so during the twenty-year planning period, and (b) enforcement of the model conservation standards and education and certification programs must be implemented regionwide to be effective.

Finally, the Council's programs envision the development of a decentralized market for the delivery of conservation services in the region. There are provisions designed to encourage a more

active role for qualified private contractors in the marketing of conservation services. The programs aim to encourage local utilities, state and local governments, and private firms to contract directly with Bonneville to provide conservation savings. This decentralization will help serve the diverse needs of the region as well as increase the overall capabilities of the region's conservation system.

The conservation programs focus on the attainment of six long-term goals:

- Make existing and new residential and non-residential buildings as cost-efficient as current technology and life-cycle economics allow;

- Operate buildings that use electricity in an energy-efficient manner;

- Use renewable resources, in particular passive solar applications, in new and existing residential and non-residential buildings where their use is economically justified;

- Cause industrial electric processes, commercial equipment, and household appliances to be as energy-efficient as current technology and life-cycle economics allow;

Cause energy-management considerations to be an integral part of the planning and administrative processes of local and state governments and the private sector; and

[10-7] Make arrangements to allow government, utilities, and the private sector to share energy-management resources, information, technical expertise, and experience.

These conservation programs are discussed by sector: residential, commercial, industrial, irrigation, and state and local governments. Where appropriate the sectors are separated into programs for new and existing buildings, and specific acquisition targets are provided. A separate discussion of power system conservation also is provided.

1. Residential Sector - Existing Buildings

Bonneville currently offers a residential conservation program for existing buildings. Because of the present surplus of power, the program is being operated at what Bonneville regards as the minimum level of activity necessary to maintain

the region's conservation delivery system for the sector. The Council has decided upon a number of changes that are to be incorporated into Bonneville's program at this time.

A fair and effective residential conservation program must be able to achieve cost-effective energy savings in dwellings occupied by all kinds of households. Current studies demonstrate that utility conservation programs in the Northwest have not been successful in reaching low-income and rental households. The reasons are clear. Conservation programs that do not pay the full cost of the measures exact an entrance fee from the homeowner. Access to the program is dependent upon the homeowner's ability to bear the unreimbursed costs. This situation is aggravated if the program requires, as the Council's program does, the installation of all structurally feasible

and regionally cost-effective measures as a condition of receiving Bonneville financial assistance. The homeowner cannot trim costs by rejecting cost-effective measures. For households with a low income, cost becomes a barrier to participation. For tenants, it makes little sense to pay for weatherizing the landlord's property. For landlords, cost and competitive market conditions can often make weatherization a poor investment. Moreover, in the case of both low-income households and tenants, there is reason to believe that improved marketing of conservation programs could improve participation rates.

Section 6(k) of the Northwest Power Act requires that Bonneville distribute the benefits of its resource programs "equitably throughout the region." The Council has concluded that this requires reasonable access to residential conserva-

tion benefits by both low-income consumers and tenants.

To bolster the conservation system serving low-income households and tenants, this plan includes (a) a low-income program that pays 100 percent of the actual cost of all cost-effective conservation measures, and (b) penetration rates for low-income households and tenants which are at least proportionate to their respective shares of all electrically heated households in some reasonably defined geographic area (such as a city, county, or utility service area). For example, if 30 percent of the electric heat customers in a utility's service area are tenant-occupied units, then at least 30 percent of the electric heat units weatherized each year must be renter-occupied.

Bonneville's conservation program for existing residential buildings shall:

1A. Include all regionally cost-effective measures (including direct application renewable resources) that conserve electricity in existing residential buildings which use electricity for space heating or water heating. The program shall include both owner-occupied and rental buildings.

1B. Require an audit of the building as a condition of receiving Bonneville financial assistance. The audit shall identify all structurally feasible and regionally cost-effective conservation measures.

1C. Require, as a condition of receiving Bonneville financial assistance, the installation of all structurally feasible and regionally cost-effective conservation measures.

1D. Provide financial assistance at levels not lower than Bonneville's current program, which will achieve the Council's energy savings target in the residential sector, and which will achieve penetration rates for low-income and tenant-occupied electrically heated households at least proportionate to their respective shares of all electrically heated households in a reasonably defined geographic area (e.g., city, county, or utility service area). In no event shall the amount of financial assistance for any measure exceed 4.0 cents per kilowatt-hour.

1E. Provide a program that pays 100% of the actual cost of all structurally feasible and regional cost-effective conservation measures for low income households, at a cost not to exceed 4.0 cents per kilowatt-hour saved. This program shall be made available to households with an annual income below that specified in the formula below.

Household Size	Percentage of Median City or County Household Income	Example Based On Regional Median Income*
1	54%	\$12,455
2	62%	14,300
3	70%	16,146
4	78%	17,911
5	83%	19,144
6	88%	20,297
7	93%	21,450
8+	98%	22,604

*Shown for illustrative purposes only. Actual income will vary by city or county median income level.

1F. Provide only for hot water efficiency improvements resulting from the installation of hot water heat pumps and solar water heaters. Because the expected lifetime of water heater wraps and thermal improvements to existing tanks is less than the length of the current surplus, these measures are not included at this time.

1G. Provide for local utility or other qualified inspection of the conservation measures before the payment of any financial assistance to the contractor or homeowner and release of the contractor's bond.

1H. Permit and encourage bonded, qualified private contractors to solicit a consumer's business directly, without first going through the local utility. This can be done, for example, through the use of general [10-8] contractors who audit the building for savings of electricity and provide for all structurally

feasible and regionally cost-effective conservation measures. Following approval by Bonneville or the local utility, the measures could then be installed by the general contractor or by subcontractors.

1I. Permit and encourage individual entities other than utilities (such as state and local governments and private firms) to contract directly with Bonneville to provide savings in electric space heating.

1J. Provide certification of energy-efficient electrically heated rental property units.

Bonneville Actions

Bonneville shall:

1.1 Modify its existing residential conservation program to incorporate the features previously described and to achieve the following rate of acquisition:

By September 30, 1985, acquire 65 megawatts.

By September 30, 1988, acquire a total of 165 megawatts of which 5 megawatts shall be acquired through the installation of heat pump water heaters or solar water heaters.

1.2 Continue and expand programs such as the Energy Extension Service, which provide technical assistance to residential consumers of electricity.

1.3 Undertake demonstration programs to test the feasibility, effect on market

penetration, and cost-effectiveness of a variety of conservation delivery systems including contracting directly with private energy services firms and local governments to secure residential conservation. Demonstration programs should be selected to reflect adequately the diverse circumstances in the region.

1.4 Develop criteria for the acceptance of programs designed by individual entities (utilities, local and state governments, private firms, etc.) to market residential space and water heating savings directly to Bonneville.

1.5 Establish a certification system and training program for auditors which ensures that they will correctly apply the plan's cost-effectiveness criteria in determining the measures to be installed in each building. As a part of that process, Bonneville should evaluate methods for calculating energy consumption and savings. These methods should be suitable for use by auditors, and the most accurate method for use in the field should be chosen.

1.6 Develop and implement a demonstration program to monitor the performance and cost of solar and heat pump water heaters and passive solar space heating designs in each climate zone. This program shall include at least 600 solar water heaters. This program shall be carried out in cooperation with utilities, state and local governments, trade and professional associations, and other interested parties.

1.7 Design and implement a field research program to identify mechanisms

that will ensure quality control for all measures, specifically including wall insulation and infiltration control measures.

1.8 Design and implement a research program to assess (a) the effect of reduced air infiltration in weatherized homes on the presence of indoor air pollutants, and (b) the effectiveness of mitigation techniques.

1.9 Provide technical and financial assistance to the shelter industry (builders, lenders, appraisers, etc.) for the implementation of a uniform, region-wide energy-efficiency rating system for existing residential buildings. This system should be similar to that used by the Environmental Protection Agency to provide consumers with information about automobile fuel efficiency. The rating system should be usable by the homebuilding and lending industry and by potential home buyers to estimate future use of electricity and to assess qualification for home loans. This rating system should be consistent with that developed for new residential buildings (see Bonneville action 2.7). This system shall be fully implemented on or before January 1, 1986.

Council Actions

The Council will:

1.10 Conduct a review of conservation programs in the region to determine whether the penetration rates among low-income and tenant households meet the criteria set forth above.

1.11 Conduct a review of the effect that various financial assistance levels and education programs have had on participation rates in programs currently offered in the region and elsewhere. The analysis [sic] will include an examination of participation by income group and by ownership status.

1.12 Conduct research to assess the effectiveness of alternative conservation delivery systems and financing approaches, including full-cost reimbursement for all residential consumers regardless of income or ownership status. These projects will assess the effect of each alternative on:

Desired penetration rates.

Program costs.

Potential versus actual savings.

1.13 To the extent practicable, these research objectives will be coordinated with Bonneville programs currently in place or those soon to be implemented, such as the Hood River and Elmhurst projects.

In addition to these changes, the Council intends to examine the approach described below as a potential change to Bonneville's residential conservation program for existing buildings

Bonneville's current practice requires that each residential structure undergo a comprehensive audit before participating

in the conservation "buy-back" program. Bonneville then pays up to 29.2 cents for each kilowatt-hour estimated to be saved in a retrofit house during the first year. This method for calculating the payment for conservation savings has an apparent problem in that the payment varies substantially based on the condition of the house and its location. For example, conservation measures applied to a house in a cold climate zone will save substantially more electricity than if applied to a house in a moderate climate [10-9] zone, and therefore will be eligible for a higher payment. However, the cost of installing the conservation measures [sic] does not vary significantly between climate zones.

The Council will consider an alternative method for calculating the payment for savings of electricity that adjusts for the climate zone and existing condition of each house. To reduce the admin-

istration costs associated with each audit, this alternative would offer financing for those conservation measures which on average have been identified as being cost-effective to the region. (Those utilities desiring to provide comprehensive audits, or which are required by federal law to do so, may continue that practice.) If it is determined that certain measures are on average cost-effective to the region and these measures are not present in the house, then the measures would be eligible for Bonneville financing. One advantage of this alternative is that it may reduce the number and length of visits to the house.

This alternative involves five steps. First, the Council would identify all conservation measures which on average are cost-effective to the region. Second, the Council would determine the average cost of those measures on a cost per square

foot basis, assuming that the measures must be structurally feasible. Third, Bonneville, in consultation with the Council, the regions's utilities, and others, would establish a financing rate which would cover a percentage (up to 100 percent) of the average cost of regionally cost-effective measures. More than one financing rate may be necessary to achieve the penetration rates for low-income and renter households and tenants as required in this plan. The average cost multiplied by the financing rate would yield the acquisition price. Fourth, the consumer would be required to secure at least three contractor bids (one of which the consumer may provide) and to have all structurally feasible, regionally cost-effective measures installed. Fifth, upon inspection and approval of completed work, the consumer would receive a payment equal to the lower of (a) the low bid, or (b) the

acquisition price (i.e., the regional average cost of the work multiplied by the "financing rate").

The Council will seek public comment on this and other alternatives before including any change in the plan. The Council will soon begin a process to consider this matter. In the meantime, Bonneville should ensure that the alternative described above is considered in its conservation programs and contracts and that no action is taken which would prevent its implementation.

Expected Cost and Savings of Electricity

Through this program, Bonneville shall acquire 165 megawatts of savings during the next five years. The Council estimates that the average cost of these savings will not exceed 1.9 cents per kilowatt-hour. The marginal cost of individual conservation measures shall not exceed 4.0 cents per kilowatt-hour. These

measures are expected to result in an average savings per building of at least 3,200 kilowatt-hours per year for space heating (a reduction of approximately 35 percent.)

2. Residential Sector - New Building Standards

New buildings present one of the most significant opportunities for achieving cost-effective conservation. The installation of measures is far less expensive at the time of construction, and many conservation measures can be incorporated into construction but cannot be installed later without making structural changes to the building. With residential buildings lasting 50 years or more, it is vital to ensure that any building using electric space heat is built to efficient standards - even during periods of surplus.

These model conservation standards have been developed to ensure that new

residential buildings using electric space heat are built to produce all the savings of electricity that are economically feasible for the consumer. To allow adequate time for local review, adoption, and implementation of these standards, the Council has decided that the standards will become effective for all residential buildings that receive building permits on or after January 1, 1986.

The Council's model standard for new residential buildings specifies only the maximum electric energy use permitted for space heating in a new building. It allows designers and builders to select any means to achieve the specified energy-use budget. For example, a house could

attain the Council's standard by increasing the amount of insulation, by using a passive solar design, by heating with geothermal energy, or by combining all three approaches.

The performance standards for the space heating requirements of single-family and multi-family dwellings are shown below:

Building Type	Climate Zone*		
	1 (kWh/sq ft/yr)	2 (kWh/sq ft/yr)	3 (kWh/sq ft/yr)
Single- Family	2.0	2.6	3.1
Multi- Family	1.2	2.3	2.8

*Climate zones are based on the number of heating degree days experienced in a particular location (Zone 1: less than 6,000; Zone 2: 6,000 to 8,000; Zone 3: in excess of 8,000).

These standards are based upon the cost of electricity, using the Council's method of estimating space heating needs. Other methods may produce different results for the same measures. However, the Council's estimates of the electricity used by energy-efficient homes in the Pacific Northwest are accurate to within less than 7 percent of their actual use. Also, the Council has not analyzed the economic feasibility of these standards for consumers of other space heating fuels.

These model conservation standards may be adopted and enforced by a state or local government or by utilities where utilities are legally authorized to do so. Those entities which choose not to adopt and enforce the applicable standards should prepare an alternative plan for achieving savings that are comparable to those achievable through the use of the

standards. The alternative plan may employ electric service requirements, rate designs, or any other technique for achieving conservation. Failure to implement the standards or achieve comparable savings will subject utilities to the surcharge provisions of this plan (see Method for Calculating Surcharges, Appendix D).

[10-10] Actions

State governments, local governments, or utilities should:

2.1 By January 1, 1986, adopt and enforce the applicable model conservation standards for new electrically heated residential buildings; or

2.2 By January 1, 1986, adopt and enforce an alternative plan for achieving savings comparable to those that would be achieved through implementation of the applicable model conservation standards. This plan should be developed by or in cooperation with the electric utility or utilities serving the jurisdiction.

Suggested approaches to achieving these residential performance standards are

provided in Appendix J (Volume II, available on request).

Bonneville Actions

Bonneville shall:

2.3 Develop a consistent procedure for certifying compliance with these model standards. This procedure shall be available on or before January 1, 1985 and shall be offered throughout the region.

2.4 Develop a procedure to review and evaluate alternative plans to achieve comparable savings. This procedure shall be available on or before January 1, 1985.

2.5 Develop and implement an education program regarding the provisions of these model standards for builders, architects, designers, real estate appraisers, code officials, and lending institutions. This program shall be in place and operating by January 1, 1985 and shall be offered throughout the region.

2.6 Assist the U.S. Department of Housing and Urban Development to develop and adopt electric energy-efficiency standards for manufactured housing in the Pacific Northwest. The standards should be cost-effective for the region and economically feasible for owners of manufactured housing. To the extent practicable, these standards should be consistent with the standards in this section for other types of construction.

2.7 Provide technical and financial assistance to the housing industry (including builders, lenders, appraisers,

etc.) for the implementation of a uniform regionwide energy-efficiency rating system for new residential buildings. This rating system should be similar to that used by the Environmental Protection Agency to provide consumers with information about automobile fuel efficiency. The rating system should be usable by the homebuilding and lending industry and potential home buyer to estimate future use of electricity and qualification for home loans. This rating system should be consistent with that used for existing residential buildings. (see Bonneville action 1.9). This system shall be fully implemented on or before January 1, 1986.

2.8 Develop and implement a program which provides incentives for meeting these model standards in residential buildings for which building permits are issued before January 1, 1986. The program shall be designed to result in at least 25 percent of the new residential buildings being built to the Council's model standard between January 1, 1984 and January 1, 1986. This program shall include:

Certification by the local utility, local government, or by independent appraisers of houses which meet or exceed the applicable model standard.

A public education and marketing program which emphasizes the energy-savings features and value of houses that achieve the model standard.

Efficiency awards to builders of houses which meet or exceed the applicable model standard.

2.9 Develop and initiate a program to provide financial incentives to homeowners where governmental entities have adopted and enforced the model standard, or a qualifying alternative plan, prior to January 1, 1986. The incentives provided in this program should be based on the estimated amount of electric energy to be saved by the dwelling (compared to an equivalent dwelling built to current code) between the time it receives its final certificate of occupancy and January 1, 1986. The incentive payment should be set at 4.0 cents per kilowatt-hour saved.

2.10 Pay for the incremental cost above that required to meet current code for a sample demonstration of houses built to the model standards. This program shall include:

A sample of at least 1,000 single-family and 200 multi-family buildings which are separately metered for space heating, waste heating, and other appliance uses. The buildings should be located in proportion to population distribution across the region. The Council will consider a reduction in the sample size upon a demonstration that statistically significant results can be obtained with a small number of units.

A measurement of the level of air infiltration and indoor air quality for the model houses.

Occupant data, including the type and number of appliances owned, family size, use of wood heat, thermostat settings, indoor air

temperature, and other information determined in consultation with the Council.

A control group of comparable buildings built to current code or practice.

These demonstration houses shall be included in the number of houses built to the Council's model standards between January 1, 1984 and January 1, 1986, under the incentive program provided in action 2.7.

The program measures described in actions 2.3, 2.5, and 2.8 shall be carried out in cooperation with state and local governments, utilities, trade and professional associations, and other interested parties.

Council Actions

The Council will:

2.11 Investigate the feasibility of incorporating the Council's model standard for new residential buildings into the International Congress of Building Officials (I.C.B.O.) Uniform Building Code.

[10-11] 2.12 Investigate potential additions to the model standard for new residential buildings; in particular, the establishment of energy performance budgets for water heating.

Expected Cost and Savings of Electricity

The Council estimates that these model standards will produce at least 35 megawatts of space heat savings in new buildings built during the next five years, assuming the Council's medium-high growth rate. The Council estimates that the average cost of these savings will not exceed 2.0 cents per kilowatt-hour and projects that these standards will reduce space heating use by 60 percent. The Council further estimates that the cost to Bonneville of implementing these standards will not exceed 4/10 of a cent per kilowatt-hour. The marginal cost of any individual conservation measure needed to achieve these model standards shall not exceed 4.0 cents per kilowatt-hour.

3. Residential Sector - Conversion Standard

It does little good to require that all new residential buildings with electric space heating satisfy model conserva-

tion standards if houses that are not built with electric space heating can be converted to electricity freely. The region would be inviting consumers to circumvent the new building standards. On the other hand, it would be unreasonable to require that all houses meet the new building standard before they can be converted to electric space heating, because certain conservation measures are not structurally or economically feasible in older buildings. To reconcile these differences, the Council has developed a model conservation standard specifically for residential buildings that were granted building permits before January 1, 1986 and are being converted to electric space heating. Residential buildings that are granted building permits after January 1, 1986 will be required to meet the new building standards (Action 2) if and when they are converted to electric space heat.

This standard will ensure that buildings converted to electric space heat from other fuels will meet minimum energy-efficiency requirements. This standard may be adopted by state or local governments or by utilities where they are authorized to do so. Entities which choose not to adopt this standard should prepare an alternative plan that will result in savings which are comparable to the savings achievable through this model standard. Failure to implement this standard or achieve comparable savings will subject utilities to the surcharge provisions of this plan (see Method for Calculating Surcharges, Appendix D).

Actions

State governments, local governments, or utilities should:

3.1 By January 1, 1986, adopt and enforce the model conservation standard described in Appendix L for the conversion of residential buildings to electric space heating; or

3.2 By January 1, 1986, adopt and enforce an alternative plan for achieving savings comparable to those that would be achieved through implementation of the model standard.

Appendix L is contained in Volume II, which is available on request. The standard shall be effective for all conversions in which the electric space heating system is installed on or after January 1, 1986.

Bonneville Actions

Bonneville shall:

3.3 Develop a consistent procedure for certifying compliance with this model standard. The procedure shall be available on or before January 1, 1985, and shall be offered throughout the region.

3.4 Develop and implement an education program regarding the provisions of this model standard for electricians, furnace dealers, home builders, architects, designers, real estate appraisers, code officials, and lending institutions. This program shall be in place and operating by January 1, 1985, and shall be offered throughout the region.

3.5 Develop a procedure to review and evaluate alternative plans to achieve comparable savings. This procedure shall be available on or before January 1, 1985.

The program measures described in actions 3.3 and 3.4 shall be carried out in cooperation with state and local governments, utilities, trade and professional associations, and other interested parties.

Expected Cost and Savings of Electricity

The Council evaluated the potential conversion to electric heat of unweatherized oil and gas heated houses. This assessment revealed that each conversion could cost the region in excess of \$8,300 per building in new resource requirements over the next twenty years. The Council estimates that the model standard will reduce the annual electric space heating needs in an average house by approximately 5,000 kilowatt-hours. These savings will reduce the cost of new resource require-

ments by more than \$3,100 per building by requiring weatherization prior to conversion to electric heat. Total regional savings will vary depending on how consumers respond to future oil and natural gas prices.

4. Residential Sector - New Appliances

The Council decided against adopting model conservation standards for new appliances because appliances now on the market already meet the California appliance efficiency standard and any new standard for appliances should be coordinated with other states.

Nevertheless, a demonstration program would be useful to determine whether financial incentives could produce cost-effective appliance efficiency savings. Many consumers are unaware of the attractive economics of purchasing a slightly more expensive, but markedly more efficient, new refrigerator, freezer or

water heating system when they replace their current appliance. In addition, many major appliance purchases are made by third parties, such as builders and rental property managers, who have little incentive to select efficient [10-12] models. This program is designed to encourage the purchase of new and replacement appliances which are more energy efficient. This program focuses initially on incentives, while investigating the necessity and desirability of adopting standards in the future.

Bonneville's program for new appliances shall:

4A. Focus initially on refrigerators, freezers, water heaters, space and water-heating heat pumps, and solar water heaters.

4B. Provide dealer and/or customer incentives based on the efficiency of new appliances compared to the shipment weighted efficiency of comparable models sold the previous year.

4C. Allow manufacturers and distributors to receive direct payments from Bonneville for appliance savings of

electricity verified by actual appliance sales invoices.

4D. Offer financial incentives, including incentives to dealers, sufficient to reduce the number of older and less-efficient refrigerators and freezers that are being operated in the region.

Bonneville Actions

Bonneville shall:

4.1 Develop and implement a region-wide appliance efficiency demonstration program which incorporates the features described above. This program shall achieve the following rate of acquisition:

By September 30, 1985, acquire 2 megawatts.

By September 30, 1988, acquire a total of 5 megawatts.

The program should assess the feasibility, cost-effectiveness, and effect on the market penetration of (a) offering direct financial incentives to manufacturers, distributors, and/or dealers to encourage the sale of energy-efficient major electric appliances, and (b) offering third-party purchasers (e.g., builders, rental property managers, etc.) direct financial incentives to install

energy-efficient major electric appliances.

4.2 Fund a field research project which assesses the effect of energy-efficient appliances, including heat pump water heaters, on the space heating requirements of fully weatherized residential buildings and new residential buildings that meet the Council's model standards.

4.3 Develop and implement (in cooperation with utilities, trade and professional associations, educational institutions, community organizations, and other interested parties) education and marketing programs regarding energy-efficient appliances for distributors, dealers, and purchasers (homeowners, rental property managers, etc.).

Council Actions

The Council will:

4.4 Assess the effect of incentive, education, and marketing strategies and programs on consumer purchases of energy-efficient residential appliances.

4.5 Investigate, in conjunction with other states (including California), the desirability and feasibility of establishing uniform appliance efficiency standards.

Expected Cost and Savings of Electricity

Bonneville shall acquire 5 megawatts of energy savings from more efficient appliances during the next five years.

The Council estimates that the average cost of these savings will not exceed 1.6 cents per kilowatt-hour. The marginal cost of individual appliance conservation savings shall not exceed 4.0 cents per kilowatt-hour.

5. Commercial Sector - Existing Buildings

Bonneville does not currently offer any conservation program for existing commercial buildings (other than government or institutional buildings). This plan calls for the development of a program for this sector which will provide approximately 20 percent of all conservation savings over the next five years assuming the Council's medium-high growth forecast. The rate of acquisition for this program has been established at a minimum level to develop and maintain the region's ability to acquire conservation in this sector.

Bonneville's conservation program for this sector shall:

5A. Include all regionally cost-effective measures in existing commercial buildings that use electricity for space conditioning. A conservation measure shall be deemed to be regionally cost-effective if it has a cost of 4.0 cents per kilowatt-hour or less.

5B. Require, as a condition of receiving Bonneville financial assistance, an audit which meets Bonneville's current minimum requirements for commercial building audits. The audit shall identify all structurally feasible and regionally cost-effective measures that conserve electricity, and shall take into consideration the effect of those measures on the consumption of non-electric energy. Bonneville shall provide reimbursement for auditing costs incurred by commercial customers when audits are performed by qualified personnel according to Bonneville's current minimum requirements, and when the audits result in savings of electricity.

5C. Require, as a condition of receiving Bonneville financial assistance, the installation of all structurally feasible and regionally cost-effective conservation measures, including those operation and maintenance procedures which have simple payback periods of less than one year.

5D. Set financial assistance at a level which will achieve the expected savings of electricity at the lowest possible cost to Bonneville ratepayers, up

to the full cost of the conservation measures, if necessary. In no event shall the amount of financial assistance for any measure exceed the regional cost-effectiveness level of 4.0 cents per kilowatt-hour.

5E. Provide technical assistance and training for commercial sector building operators.

5F. Provide for local utility inspection or other qualified inspection of the conservation measure before the payment of financial assistance to the contractor or release of the contractor's bond.

[10-13] 5G. Allow individual entities other than utilities (such as contractors, state and local governments, and private firms) to receive direct payments from Bonneville for verifiable commercial sector electric energy savings.

Bonneville Actions

Bonneville shall:

5.1 Develop and offer a regionwide commercial conservation program which incorporates the features described above. This program shall achieve the following rate of acquisition:

By September 30, 1985 acquire 20 megawatts.

By September 30, 1988, acquire a total of 90 megawatts.

5.2 Support the development and implementation of comprehensive education

and training programs in energy-efficient commercial building design, construction, operation, and maintenance.

Expected Cost and Savings of Electricity

Through this program, Bonneville shall acquire 90 megawatts of savings from existing commercial buildings during the next five years. The Council estimates that the cost of these savings will not exceed 1.9 cents per kilowatt-hour. The marginal cost of any individual conservation measure shall not exceed 4.0 cents per kilowatt-hour.

The average savings in electricity per building is expected to be approximately 30 percent. These savings should be obtained through the implementation of equipment efficiency improvements such as lighting, heating, ventilation, cooking, air conditioning and refrigeration, and building envelope modifications.

6. Commercial Sector - New Building Standard

For the same reasons described under 2. Residential Sector - New Building Standards, it is vital to ensure that commercial buildings using electric space conditioning and/or lighting are built to efficient standards - even during periods of surplus. This commercial building standard has been developed to ensure that new commercial buildings are built to produce savings of electricity that are economically feasible for the consumer. To allow adequate time for adoption and implementation of this standard, the Council has decided that the standard will become effective for commercial buildings that receive building permits on or after January 1, 1986.

This standard is a modified version of the most recent model energy code of the American Society of Heating, Refrigeration and Air Conditioning Engineers

(ASHRAE), ASHRAE 90-80. The standard includes equipment performance specifications, lighting budgets, and minimum building envelope efficiency requirements. The lighting budgets are identical to those now required by Seattle's Energy Code, with the exception of office and retail buildings. The standard for office and retail buildings is equivalent to the office standard currently proposed by the California Energy Commission (1.5 watts per square foot plus an additional 1.5 to 3.0 watts per square foot for task and spot lighting).

This model conservation standard may be adopted and enforced by a state or local government or by utilities where utilities are legally authorized to do so. Those entities which choose not to adopt and enforce the standard should prepare an alternative plan for achieving savings that are comparable to those achievable

through the use of the standard. The alternative plan may employ electric service requirements, rate designs, or any other technique for achieving conservation. Failure to implement the standard or achieve comparable savings will subject utilities to the surcharge provisions of this plan (see Method for Surcharge, Appendix D).

Actions

State governments, local governments, or utilities should:

6.1 By January 1, 1986, adopt and enforce the model conservation standard described in Appendix J for new commercial buildings that use electricity for space conditioning; and

6.2 By January 1, 1986 adopt and enforce the model conservation standard described in Appendix J for lighting for new commercial buildings which do not use electricity for space conditioning; or

6.3 By January 1, 1986, adopt and enforce an alternative plan for achieving savings comparable to those that would be achieved through implementation of the model conservation standard for new commercial buildings. This plan should be

developed by or in cooperation with the electric utilities serving the jurisdiction.

Appendix J is contained in Volume II, which is available on request.

Bonneville Actions

Bonneville shall:

6.4 Develop a consistent procedure for certifying compliance with this model standard. This procedure shall be available on or before January 1, 1985 and shall be offered throughout the region.

6.5 Develop and implement an education program regarding the provisions of this model standard for builders, building owners, architects, designers, real estate appraisers, code officials, and lending institutions. This procedure shall be available on or before January 1, 1985 and shall be offered throughout the region.

6.6 Develop a procedure to review and evaluate alternative plans to achieve comparable savings. This procedure shall be available on or before January 1, 1985.

6.7 Develop and implement a program which provides incentives for meeting this model standard in buildings for which building permits are issued between January 1, 1984 and January 1, 1986. The program shall be designed to achieve at least 15 average megawatts of savings.

This program shall include:

Certification by the local utility, local government, or by independent appraisers of buildings which meet or exceed the model standard.

[10-14] A public education and marketing program which emphasizes the energy-savings features and value of buildings that achieve the model standard.

Financial incentives to architects and engineers to prepare energy-efficient alternative commercial designs which meet the Council's standard and are approved by local building officials. Payment of the incentive shall be contingent upon construction of the building according to the approved design.

Efficiency awards to builders when their buildings meet or exceed the applicable model standard.

6.8 Develop and initiate a program to provide financial incentives to building owners where governmental entities have adopted and enforced the model standard, or a qualifying alternative plan, prior to the required implementation date. The incentives provided in this program should be based on the estimated amount of electric energy saved by the building (compared to current code) between the time it commences normal operation conditions and January 1, 1986. The incentive should be set at 4.0 cents per kilowatt-hour.

The program measures described in actions 6.4, 6.5, and 6.7 shall be

carried out in cooperation with state and local governments, utilities, trade and professional associations, and other interested parties.

Council Actions

The Council will:

6.9 Investigate potential additions to the model standard for commercial buildings, in particular the establishment of total building energy performance budgets, more stringent lighting standards, and mechanical system specifications. This investigation will include a review of the ASHRAE 90-80E-LIG standard.

6.10 Investigate the feasibility of incorporating the Council's model standard for new commercial buildings into the International Congress of Building Officials (I.C.B.O.) Uniform Building Code.

Expected Cost and Savings of Electricity

This conservation standard should produce approximately 45 megawatts of savings from new commercial buildings during the next five years, assuming the Council's medium-high growth forecast. The Council estimates that the cost of these savings will not exceed 1.7 cents

per kilowatt-hour. The marginal cost of any individual conservation measure shall not exceed 4.0 cents per kilowatt-hour.

7. Commercial Sector - Conversion Standards

As explained under 3. Residential Sector - Conversion Standard, it does little good to require that all new commercial buildings using electricity for space conditioning satisfy model conservation standards, if buildings that are not built with electric space conditioning can be converted to electricity freely. Accordingly, the Council has developed a model conservation standard specifically for commercial buildings that were granted building permits [sic] before January 1, 1986 and are being converted to electric space conditioning. Commercial buildings that are granted building permits after January 1, 1986 will be required to meet the new building standard if and when they

are converted to electric space conditioning.

This standard will ensure that buildings converted to electric space conditioning from other fuels will meet minimum energy-efficiency requirements. This standard may be adopted by state or local governments or by utilities where they are authorized to do so. Entities which choose not to adopt this standard should prepare an alternative plan that will result in savings which are comparable to the savings achievable through this model standard. Failure to implement this standard or achieve comparable savings will subject utilities to the surcharge provisions of this plan (see Method for Calculating Surcharges, Appendix D).

Actions

State Governments, local governments, or utilities should:

7.1 By January 1, 1986, adopt and enforce the model efficiency standard described in Appendix J for conversion of commercial buildings to electric space conditioning; or

7.2 By January 1, 1986, adopt and enforce an alternative plan for achieving savings comparable to those that would be achieved through implementation of the model efficiency standard.

Appendix J is contained in Volume II, which is available on request. The standard shall be effective for all conversions for which the building permit is issued on or after January 1, 1986.

Bonneville Actions

Bonneville shall:

7.3 Develop a consistent procedure for certifying compliance with this model standard. This procedure shall be available on or before January 1, 1985, and shall be offered throughout the region.

7.4 Establish a procedure for evaluating alternative plans for achieving implementation of the Council's model efficiency standard for conversion to electric space conditioning. This procedure shall be available on or before January 1, 1985.

7.5 Develop and implement an education program regarding the provisions of this model standard for builders,

architects, designers, real estate appraisers, code officials, and lending institutions. This program shall be available on or before January 1, 1985, and shall be offered throughout the region.

E

The program measures described in actions 7.3 and 7.5 shall be carried out in cooperation with state and local governments, utilities, trade and professional associations, and other interested parties.

[10-15] Expected Cost and Savings of Electricity

The council evaluated the potential for conversion to electric space conditioning of existing oil and gas heated and cooled commercial buildings. This assessment revealed that each conversion could cost the region in excess of \$6,000 per average kilowatt of new resource requirements over the next twenty years. This standard is expected to reduce that cost by requiring cost-effective lighting, heating, ventilation and air conditioning, and water heating efficiency improvements

prior to conversion to electric space conditioning. Total regional savings will vary depending upon how consumers respond to future oil and natural gas prices.

8. Commercial Sector - Demonstration Program

The Council's model conservation standard for new commercial buildings is a slightly modified version of the ASHRAE 90-80 model energy code. That code does not attempt to capture all savings of electricity that are possible below a cost of 4.0 cents per kilowatt-hour, nor even all those that are economically feasible for consumers. The Council is confident, based upon its studies, that additional savings can be achieved at prices that are cost-effective to Bonneville and economically feasible for consumers. This program is designed to acquire some of those savings and develop better information about actual levels of use of electricity and potential savings of electricity in commercial buildings. As the

need for additional resources develops, the Council will be in better position to forecast the conservation available in this area, and Bonneville will be in a position to accelerate its program to acquire more savings.

The objective of this program is to develop a conservation program or model standard for acquiring energy-efficiency improvements in commercial buildings beyond those required by the model conservation standards in Action 6.

This program shall include:

8A. Financial incentives payable to architect/engineers, developers, contractor/builders, and others who design and build commercial buildings that operate below a specified energy performance budget.

8B. Technical and financial assistance to local governments to adopt model conservation standards for new commercial buildings which exceed the Council's standards by providing technical and financial assistance in the development and implementation of such standards.

8C. Incentive payments, set at an amount up to the regional cost-effective limit of 4.0 cents per kilowatt-hour, for the value of savings in electricity

achieved beyond those that would be realized at the energy performance budget specified below. These incentives shall be offered for all buildings that use electricity, regardless of the type of space conditioning system.

Bonneville Actions

Bonneville shall develop a demonstration program for acquiring commercial conservation savings beyond the savings that would be realized under the Council's model standard. Specifically, Bonneville shall:

8.1 Design and initiate a demonstration program which offers financial incentives to secure construction of a total of 30 buildings, from at least five different building categories. Incentives of 4.0 cents per kilowatt-hour on a levelized life-cycle cost basis shall be paid for every kilowatt-hour of savings which exceeds the Council's model conservation standard for new commercial buildings. Only those buildings that meet or exceed the following total energy budgets under normal operating conditions will be eligible for the incentive.

8.2 Develop data on the construction cost, actual and projected energy consumption, and features of very efficient commercial buildings constructed in climates similar to those found in the region.

Expected Cost and Savings of Electricity

Savings from this program are not currently included in the Council's resource portfolio. This plan calls for developing, by 1988, a conservation program or model standards for acquiring savings of electricity in new commercial buildings in excess of the Council's model standard. The Council anticipates that this program could produce a 30 percent improvement in commercial building efficiency over the Council's model standards, at a cost of below 4.0 cents per kilowatt-hour.

9. Industrial Sector

The great variety of industrial uses of electricity in the Northwest and the inaccessibility of certain proprietary information make it difficult to develop model conservation standards or a uniform conservation program for the industrial sector. The Council has concluded that the most effective way to acquire indus-

trial conservation may be through the use of financial incentives.

For this program to work effectively, Bonneville must fund technical assistance for industrial consumers to help them identify their potential savings, and must provide consistent guidelines in its acquisition requests. When Bonneville acquires conservation from this sector, Bonneville should publish a notice of its requirements and solicit conservation proposals from Northwest industrial consumers. Bonneville can then evaluate the proposals and select those that offer the most cost-effective savings.

Bonneville does not currently offer an industrial conservation program. This program is designed to develop the Council's and Bonneville's understanding of the potential for conservation in the industrial sector and place Bonneville in

a position to acquire industrial conservation when it is needed.

[10-16] Bonneville's program for this sector shall include:

9A. Solicitation of industrial conservation projects either by Bonneville or through retail utilities. The solicitation document shall describe the characteristics of the conservation that is needed, state a maximum acquisition price, and contain other terms and conditions that would be necessary in preparing a proposal.

9B. Payments at a level that will achieve the expected electricity savings at the lowest possible cost to Bonneville ratepayers, up to the full cost of the conservation measures, if necessary. In no event shall the payment for any measures exceed the regional cost-effectiveness level of 4.0 cents per kilowatt-hour saved.

9C. Independent verification of efficiency improvements.

9D. Technical assistance for industrial customers who request it, for the purpose of identifying industrial conservation projects.

Bonneville Actions

Bonneville shall:

9.1 Develop a regionwide industrial conservation program which incorporates the features described above. This

program shall achieve the following rate of acquisition:

By September 30, 1985, acquire 15 megawatts.

By September 30, 1988, acquire a total of 45 megawatts.

Council Actions

The Council will:

9.2 Conduct, in cooperation with the region's industrial customers, a detailed survey to identify industrial conservation potential above the 545 megawatts contained in the Council's resource assessment. This survey should identify conservation potential up to a cost of 5.0 cents per kilowatt-hour.

Expected Cost and Savings of Electricity

This program shall produce 45 megawatts of savings during the next five years. The Council estimates that the cost of these savings will not exceed 1.6 cents per kilowatt-hour. The marginal cost of individual conservation measures shall not exceed 4.0 cents per kilowatt hour.

10. Irrigation Sector

Developing conservation programs for the irrigation sector presents prob-

lems similar to those in the industrial sector. There are a wide variety of irrigation techniques, soil conditions, crop requirements, and other conditions that make it difficult to impose model conservation standards or develop a uniform conservation program for this sector. The Council therefore proposes a conservation acquisition program similar to the one proposed for the industrial sector.

The objective of this program is to acquire efficiency improvements in the use of electricity on new and existing irrigated acreage. Bonneville's program for this sector shall include.

10A. Solicitation for irrigation conservation projects either by Bonneville or through retail utilities. The solicitation document shall describe the characteristics of the conservation that is needed, state a maximum acquisition price, and contain other terms and conditions that would be necessary in preparing a proposal.

10B. Support for technical assistance to irrigation consumers through such existing agencies as the Agricultural Extension Service.

10C. Payments at a level which will achieve the expected savings of electricity at the lowest possible cost to Bonneville ratepayers, up to the full cost of conservation measures, if necessary. In no event shall the payment for any measure exceed the regional cost-effectiveness level of 4.0 cents per kilowatt-hour.

10D. Financial assistance to lending institutions and other agencies which provide below-market rate loans or other forms of financial assistance to customers for the purchase and installation of energy-efficient irrigation systems or for efficiency improvements to existing irrigation systems.

10E. A requirement, as a condition of participating in incentive programs, that irrigation systems installed on newly irrigated lands be designed to produce all savings in electricity that are cost-effective to the region. Incentive payments shall be made available to defray increased capital costs associated with such installations. Irrigators who decline to participate shall not be eligible for subsequent retrofit payments covering efficiency improvements that could have been effected when their systems were installed.

Bonneville Actions

Bonneville shall:

10.1 Develop a regionwide irrigation conservation program which incorporates the features described above. This program shall achieve the following rate of acquisition:

By September 30, 1985, acquire 15 megawatts.

By September 30, 1988, acquire a total of 35 megawatts.

10.2 Initiate a demonstration project which assesses the feasibility and cost-effectiveness of working through agricultural lending institutions and other agencies to facilitate irrigation sector conservation.

10.3 Initiate a request for commercial demonstrations of irrigation system efficiency improvements, including but not limited to flow meter development, deficit irrigation, low-energy precision application systems, irrigation scheduling, and advanced pump designs.

10.4 Initiate a demonstration project to identify technically sound and practically valid soil monitoring and irrigation scheduling programs.

[10-17] 10.5 Develop and implement programs, through government agencies, universities, and other existing institutions, to train irrigation specialists in soil moisture monitoring and irrigation scheduling.

10.6 Develop and implement education programs to demonstrate the potential for electricity and cost savings through soil moisture monitoring and improved irrigation application techniques and systems.

10.7 Initiate a market and technical assistance program to aid farmers and irrigation investment decisionmakers in making sound, cost-effective investment decisions on conservation equipment.

Expected Cost and Savings of Electricity

This program shall produce 35 megawatts of savings during the next five years. The Council estimates that the cost of these savings will not exceed 1.6 cents per kilowatt-hour. The marginal cost of individual conservation measures shall not exceed 4.0 cents per kilowatt-hour.

11. Power System Conservation

The power system offers a number of opportunities for conservation through improvements in the efficiency of generation, transmission, and distribution. Bonneville and the Corps have continuing programs in this area. The Council is unaware of any comprehensive study of potential system conservation, but current information on improvements to hydropower

generation indicates that at least 270 megawatts of savings can be achieved. Coordination of existing programs and a study of other potential improvements could identify substantially greater amounts of low-cost conservation.

The objective of this program is to improve the region's capability to acquire cost-effective conservation through improvements in the efficiency of electric power generation, transmisssion, and distribution.

Bonneville Actions

Bonneville shall:

11.1 Continue existing programs to improve the efficiency of power transmission and distribution in the region. These programs shall be modified to the extent necessary to gather data which might be used to identify further efficiency improvements.

11.2 Design and conduct studies of potential improvements that could be made in the efficiency of power generation, transmission, and distribution at a cost of up to 5.0 cents per kilowatt-hour. These studies shall be coordinated with the U.S. Army Corps of Engineers, the

Bureau of Reclamation, and generating utilities. A report on these studies shall be submitted to the Council by January 31, 1985, in order to be considered in the first scheduled review of this plan.

12. State and Local Government

Bonneville's current programs for state and local governments include a street and area lighting efficiency improvement program and an institutional buildings program. Bonneville also offers technical assistance to local governments and small power users, and financial assistance to general purpose local governments and Indian tribes.

The objective of this program is to assist state and local governments to identify and achieve cost-effective electric energy savings and resource development.

Bonneville Actions

Bonneville shall:

12.1 Develop and implement a program to reimburse state and local governments

for the full incremental cost of adopting and enforcing all model conservation standards under this plan, so long as enforcement of the model conservation standards program as a whole is cost-effective. This program shall be in place and operating by January 1, 1985 and shall be offered throughout the region.

12.2 Develop and implement a region-wide acquisition program which purchases savings of electricity from state and local government buildings and facilities. Payments for savings from local government projects shall be made at levels that will achieve savings of 10 megawatts by September 30, 1985, up to the full cost of the conservation measures, if necessary. In no event shall the amount of financial assistance exceed the regional cost-effectiveness level of 4.0 cents per kilowatt-hour.

12.3 Allow state and local governments to receive direct payments from Bonneville for cost-effective conservation savings.

12.4 Provide technical and financial assistance to those jurisdictions and communities wishing to identify conservation and resource development projects.

12.5 Provide technical and financial assistance in the revision and adoption of land-use plans and zoning and subdivision ordinances which affect on-site energy use, solar access protection, solar orientation, and local permitting processes for energy developments.

12.6 Initiate an assessment of energy conservation and resource develop-

ment potential in state and local government owned or operated buildings and facilities. This assessment should take advantage of information already gained from Bonneville's Institutional Buildings Program, Financial Assistance Program, and Local Government Technical Assistance Program. The assessment should be completed by January 1, 1985.

12.7 Support the development of mechanisms to help state and local government, utilities, and the private sector cooperate in conservation and resource acquisitions and to share energy management information, technical expertise, and experience.

12.8 Provide for continuation of Bonneville's Institutional Buildings Program and Local Government Technical Assistance Program at program levels at least equivalent to those provided in 1982-1983.

[10-18] 12.9 Modify its existing Institutional Buildings Program to accommodate more readily the savings in electricity from improvements in water and wastewater treatment systems, and simplify the application process for simple improvements which can be justified without a comprehensive audit.

12.10 Expand regionwide programs which provide technical and financial assistance to state and local government entities to provide assistance in implementing elements of this plan.

12.11 Consult with state and local governments and local government associations regarding the most appropriate

mechanisms to provide for implementation of model conservation standards, technical and financial assistance, and the development and acquisition of local government resources and conservation programs, including those which affect local government buildings and facilities.

12.12 Provide maximum flexibility and full opportunity for state and local governments in the implementation of this plan.

12.13 Terminate financial assistance for street and area lighting improvement during the current period of surplus. Street and area lighting improvements have a short expected lifetime. These improvements would contribute unneeded savings during the surplus but would not last long enough to offset later deficits.

Council Actions

The Council will:

12.14 Assemble information on the use of electricity in public buildings and facilities and incorporate that information into its analytical system.

12.15 Continue to examine the roles for state and local governments, Bonneville, and the region's utilities, in the implementation of the plan. Disputes regarding these roles may be brought to the Council for clarification of the Council's intention.

Expected Cost and Savings of Electricity

The savings produced through efficiency improvements in new and existing

government buildings and facilities were developed in conjunction with the commercial sector programs and total 10 megawatts for the next two years. By September 30, 1988, a total of 15 megawatts shall be acquired from this sector, of which 2 megawatts are expected to be produced by water and wastewater system efficiency improvements. These savings are in addition to the commercial sector. The Council's twenty-year target for this sector will be developed following completion of the assessments called for above. The Council estimates that the average cost of these savings will not exceed 1.9 cents per kilowatt-hour. The marginal cost of individual conservation measures shall not exceed 4.0 cents per kilowatt hour.

OTHER PROGRAMSResource and Other Program and Policy Options

This section outlines additional short- and long-term goals and objectives established by the Council. Contained in this section are Council decisions on renewable resources; marketing interruptible power in the region; sales of firm surplus energy in the Southwest; policies on cogenerated electricity, surcharges, and rate design; combustion turbines; methods for quantifying environmental costs and benefits; and a brief summary of additional Council actions during the next two years. This section lists specific actions to be taken by Bonneville and the Council over the next two years and beyond.

One of the central features of this plan is the ability to acquire an option on resources. The current surplus of electricity will provide the region with

time to conduct a thorough analysis of the options concept. The analysis, in consultation with Bonneville, utilities, and resource developers, will seek to identify federal, state, and local laws and regulations and to resolve conflicts that could pose barriers to implementation of resource options.

13. Options

The options concept offers significant opportunity for dealing with planning uncertainty. Like a new technology, this new concept will require demonstration and development before it can be depended on to provide planning flexibility. The objective of this program is to work with state siting authorities and federal and state regulatory agencies to resolve institutional, regulatory, legal, and technical barriers to the options concept.

This effort will help to resolve issues about the efficacy of the options

concept, including the extent of control over a resource Bonneville can reasonably expect under an option. To accomplish this, regulatory uncertainties under state and federal laws which may impede development or restrict the usefulness of options must be identified and resolved.

The objectives of this effort are:

13A. to better define the elements of and degree of regional control available through an options arrangement by monitoring development of actual hydro-power options;

13B. to identify and resolve constraints to effectiveness of options (including limitations on effective "shelf-life" of resources on which options have been obtained) which result from federal and state agency regulation and under other statutes;

13C. to identify potential for effecting sales of resources outside the region to overcome the problem of limited resource shelf-life, and otherwise permit timely development of resources which might otherwise be lost to the region;

13D. to identify appropriate risk factors and uncertainties which prevent resource options from being considered "available," and

13E. determine the appropriate size of the inventory of options to provide appropriate planning insurance.

[10-19] Bonneville Actions

Bonneville shall:

13.1 Enter into a comprehensive process of cooperation with the four Northwest states in order to exchange information on energy resource and energy facility siting. The purpose of this arrangement will be to coordinate information about projected regional energy needs and the types of resources that will satisfy those needs. This exchange will lead to consistent federal and state policies regarding projected resource acquisitions with due deference to state siting constraints and considerations.

13.2 Create a state options task force with representatives of the four state (and in particular, any state siting authority), Bonneville customers, public interest groups, and the Council. The purpose of this task force will be to develop provisions for options in each state. For example, the State of Oregon Siting Council has proposed a method of banking sites for regional resources with the State of Oregon. Although a great many questions remain to be resolved, this proposal provides a significant step toward the successful coordination of an options process in the region such that the authority of the state Siting Council is fully recognized while providing the region with a reliable plan for meeting its needs for resources through the options concept.

13.3 Identify, by project, specific resources which may be lost to the region if decisions to acquire an option or to acquire the resources are not made. This inventory should recognize each resource sponsor's requirements for keeping the resource available to the region.

13.4 Explore opportunities for marketing power and for removal of constraints to marketing power outside the region which could facilitate development of some resources.

Council Actions

The Council will:

13.5 Establish a task force composed of representatives of the Council, Bonneville, utilities, and other interested parties to identify for each resource type: (1) each significant potential federal and state regulatory impediment to success of the options program; and (2) proposed means of resolving that uncertainty through informal understandings with the affected agencies, amendments to statutes or regulations, or other means.

13.6 Adopt criteria for determining when resources under options are sufficiently firm to be counted as "available" within the meaning of the Act.

13.7 Determine, with the assistance of other analyses to be conducted as part of this two-year plan: (1) the optimum size of the options inventory to permit development of an adequate supply of available resources; and (2) the appropriate timing for concluding option agreements to permit adequate flexibility in the preconstruction process.

13.8 Develop alternative planning approaches if options prove to be unworkable. These approaches would have to reexamine the appropriateness of planning to a high demand forecast. Other methods of obtaining resource flexibility and shorter lead times will also be explored.

14. Hydropower

The objective of this program is to test the options concept by pursuing options for future hydropower development. The Council had concluded that hydropower is an important resource in this plan. In the high growth forecast up to 920 megawatts of hydropower would be needed and appear to be available at less than 4.0 cents per kilowatt-hour. The Council recognizes that modifications to regulatory processes may have to be made before hydropower can be treated as an option in the Council's planning strategy. Further, there is unresolved concern regarding the effects of hydropower development on fish and wildlife in the region. The Council's two-year actions address these concerns.

During this two-year action plan, Bonneville shall acquire an option on each of the following listed facilities only after a finding has been made that the construction and operation of each facility will have an insignificant adverse effect on fish and wildlife population and on habitat.

Such a finding may be made only after consultation among representatives of Bonneville, the U.S. Army Corps of Engineers, the Bureau of Reclamation, the Council, state and federal fish and wildlife agencies, Indian tribes, the region's utilities, and interested non-utility sponsors.

Bonneville Action

Bonneville shall:

14.1 Acquire options on the following six categories of hydropower facilities:

1. An existing dam, currently not generating electricity, with a capacity greater than 15 megawatts.

2. An existing dam, currently not generating electricity, with a capacity of between 5 and 15 megawatts.
3. A new facility with a capacity greater than 25 megawatts.
4. A new facility with a capacity between 10 and 15 megawatts.
5. A new facility with a capacity less than 10 megawatts.
6. A new facility with an exemption from the FERC licensing process.

In acquiring options on hydropower sites, Bonneville shall adhere to the provisions of Appendix E.

Council Actions

The Council will:

14.2 Design a study to identify and rank potential hydropower sites in the region. This study will include representatives from Bonneville, the U.S. Army Corps of Engineers, the Bureau of Reclamation, the [10-20] Council, state and federal fish and wildlife agencies, affected Indian tribes, the region's utilities, and interested non-utility resource sponsors. The organization of the study, specific tasks necessary to meet the study objectives and the funding sources will be determined after the adoption of the plan and in consultation with all of the parties identified above.

Potential hydropower sites will be ranked based on fish and wildlife concerns.

Category I. Sites at which the construction and operation of hydropower facilities will have insignificant adverse effects on fish and wildlife population and habitat.

Category II. Sites at which the construction and operation of hydropower facilities will have significant adverse effects on fish and wildlife populations and habitat, but may be reduced to an insignificant level by development and implementation of proven mitigation techniques.

Category III. Sites at which the construction and operation of hydropower facilities will have significant adverse effects on fish and wildlife populations and habitat which cannot be reduced satisfactorily because of the critical nature of the habitat or populations affected, the lack of proven mitigation techniques, expense and delay, or any other reason.

The study should be based on existing data, studies, and literature to the extent these are sufficient. The emphasis of the study should be to first identify sites within Categories I or II in order

to facilitate early commitment to those sites.

The term 'sites' has been used in a broad sense to cover both specific sites and stream reaches. Although the comprehensive study might take two years or more, a progress report will be made to the Council on specific sites currently in the FERC licensing process by January 1985. This information will be used in the next revision of this plan, scheduled for adoption in November, 1985. This study shall be coordinated with other studies being done under the Council's fish and wildlife program and with the Council's efforts to refine current hydropower data bases.

14.3 Continue in its efforts to refine the data base on existing and potential hydropower sites that are environmentally sound and cost-effective. The Council will coordinate this effort

closely with the hydropower ranking study discussed above.

15. Market Interruptible Energy
In the Northwest

The objective of this program is to develop additional markets for interruptible energy in the Northwest. The effort to develop additional means of retaining the economic benefits of low-cost non-firm energy in the region is the most important energy-related economic issue over which the region has control, and it should be treated accordingly.

Bonneville Actions

Bonneville shall:

15.1 Initiate a policy to develop, to the fullest extent possible, regional markets for non-firm energy including industrial, commercial, and irrigation markets.

15.2 Set an initial goal of 900 to 1,400 megawatts of potential interruptible load in the industrial sector and conduct further investigations to determine whether more potential is available.

Council Action

The Council will:

15.3 Study whether the region should develop Northwest markets for conversion of existing firm loads to interruptible status. Such loads might include the second quartile of DSI power, some industrial loads of utilities, and

certain irrigation loads. Bonneville could purchase the right to interrupt the load during a particular low-water event. In the case of irrigation loads, farmers could decide to use cheaper interruptible power to serve a portion of their existing firm loads. The interruptibility would be gained solely through voluntary contractual arrangements between Bonneville and the customer or utility and would not be a condition of service for any customer. This study will be done in consultation with Bonneville.

16. Sale of Firm Surplus Energy to the Southwest

Bonneville and other regional utilities are engaged in an effort to market the current firm surplus to the Southwest. The Council supports these efforts. The proposed sale of the region's firm surplus is entirely consistent with efforts to market interruptible energy within the region. Neither effort is a substitute of the other.

Council Action

The Council will:

16.1 Open discussions with the California Energy Commission regarding a

sale of firm surplus power. The Council intends to consult with Northwest utilities and Bonneville as part of this process. The Council recognizes the potential benefits to both Northwest and Southwest and is prepared to use its regional power planning authority to encourage a sales agreement that benefits both regions.

17. Geothermal

The Council has concluded that a large geothermal potential exists in the region for both electric generation and direct applications that decrease the need for electricity. (Direct applications of geothermal and other renewable resources are considered in chapter 7, Conservation.) However, the precise size, characteristics, and technical potential of the geothermal resources has not been determined. The objective of this program is to encourage confirmation of the region's geothermal resource for electric generation so it can be developed quickly when the need exists. The following actions are expected to provide a base for including geothermal resources in future plans.

Bonneville Action

Bonneville shall:

17.1 Develop and implement a geothermal demonstration program that guarantees the purchase of electricity from the first 10 average megawatts generated at the most promising environmentally acceptable geothermal [10-21] site available in the region. The site should be estimated to be able to produce at a capacity of 100 megawatts or more over a 30-year period. There should be a clear agreement that if the field is developed it would be available to the region at competitive prices. The fixed purchase price should be tied to the cost to Bonneville of the energy from a new coal plant. Recognizing the demonstration nature of this venture, Bonneville should be prepared to pay a price up to 50 percent higher than the cost of energy from a new coal plant at the time of acquisition. If this program proves workable, and as need dictates, the Council will consider expanding this program to other promising sites in the region.

18. Wind

The objective of this program is to continue to assess the potential of wind resources, without investing in additional wind generation, so that this resource can be included in the plan when it becomes cost-effective. The action

item listed below should not affect Bonneville's current efforts related to the wind resource assessment and development.

Bonneville Action

Bonneville shall:

18.1 Conduct a study of the cost and expected operating efficiency of wind generators using existing and potential wind demonstration projects. The Council is interested in determining the feasibility and cost-effectiveness of including 50 average megawatts in the next revision of the plan. The Council will be assisted in making this determination through the continued efforts of Bonneville in collecting and assessing data from existing demonstration projects. Bonneville's proposed feasibility studies of wind generators on the region's coast will also assist the Council in making this determination.

19. Combustion Turbines

The objective of this program is to study potential obstacles to the construction and operation of combustion turbines and to develop methods for overcoming those obstacles. Although the Power Plant and Industrial Fuel Use Act generally prohibits use of oil and natural gas in

new power plants, it does provide for specific types of exemptions. Preliminary Council research suggests that one or more of these exemptions may be available for combustion turbines that are needed to meet unanticipated load growth and operate to "firm" hydropower. The most likely exemptions are those for:

- Peak loading;

- Cogeneration;

- Maintaining reliability of service;

- Lack of an alternate fuel at a cost not substantially exceeding that of imported oil; and

- Fuel mixtures involving alternate fuels.

State siting requirements present other potential regulatory hurdles that need to be investigated. Combustion turbines may need to be sited close to existing gas or oil pipelines, for example. Also, the Council needs to know how much energy existing combustion turbines can provide. The following

actions will assist the Council in planning to use combustion turbines as a hedge against unexpected demand growth in the higher growth forecasts.

Bonneville Action

Bonneville shall:

19.1 Acquire an existing natural gas combustion turbine and petition the U.S. Department of Energy for an exemption under the provisions of the Fuel Use Act to allow use of the combustion turbine as described in chapter 5.

Council Actions

The Council will:

19.2 Study the likelihood of obtaining further exemptions under the Fuel Use Act for combustion turbines used pursuant to the Council's resource portfolio. If necessary, the Council may request from the Department of Energy formal interpretations of the exemptions as they would apply to specific combustion turbine proposals.

19.3 Study regulatory requirements, including state siting standards, that would apply to new combustion turbines.

19.4 Study the potential contribution of existing combustion turbines and evaluate the effect of the Fuel Use Act on their use.

19.5 Study the cost-effectiveness of combustion turbines as a resource for making use of the non-firm energy from the hydropower system.

19.6 Study and evaluate the impact of Bonneville's forthcoming displacement policy on the operation of combustion turbines and service to meet top quartile loads of the Direct Service Industries.

Based on the results of these studies, the Council will re-evaluate the role of combustion turbines in the resource portfolio and make changes as necessary in future revisions of the plan.

20. Cogeneration

The cogeneration included in the high growth forecast is not needed to serve regional loads until 1993. Nevertheless, the Council recognized the potential contribution of cogeneration to the region's power system and has decided that early actions by Bonneville are necessary to preserve the option of cogeneration in the mid-1990's. The objective of this program is to preserve

cogeneration opportunities that are available before they are needed in the region.

The Council recognizes that the Federal Power Act and the Public Utility Regulatory Policies Act affects much of the development of cogeneration in the Northwest. The Council will work with appropriate agencies, Bonneville, utilities, and resource developers to coordinate activities under those statutes with the provisions of this plan.

Bonneville Actions

Bonneville shall:

20.1 Assist potential cogenerators in obtaining access to tielines which will enable them to market cogenerated electricity not currently needed by the region. Once tieline access is obtained, Bonneville should [10-22] find ways to use the region's non-firm energy to displace cogenerated power. When non-firm energy is being sold for less than the cogenerator's variable operating cost, the cogenerator could substitute this energy for cogenerated power for sale to the

tieline. The lower cost to the cogenerator could be reflected in a shared-savings price to the purchaser. Appropriate call-back provisions should be made by the cogenerator so that the region has access to the power when needed.

20.2 Assist potential cogenerators in their efforts to market cogenerated electricity in the region.

20.3 Develop a program for acquiring options that will assist potential cogenerators, when making regular scheduled plant modifications, to make appropriate investments that will permit addition of generating equipment at a later date. (An example would be replacing a worn-out low-pressure boiler with a high-pressure boiler.) This program should be ready to be implemented by the next revision of this plan.

21. Solar Generation and Advanced Thermal Technologies

New technologies will emerge that are not currently being counted on to provide firm energy. The region should be alert to any potential for new, cost-effective resources. The Council recommends that Bonneville keep abreast of emerging technologies, specifically solar. The Council andd Bonneville should follow

closely the solar demonstration projects that are currently underway in California.

Bonneville Action

Bonneville shall:

21.1 Work to improve the data base on solar insolation in the Northwest both on a broad basis and at specific promising sites.

22. Biomass

The objective of this program is to continue the Pacific Northwest Regional Bioconversion Program as presently administered by Bonneville to better develop data depicting the industrial and residential end use of biomass.

Bonneville Action

Bonneville, in consultation with the Council and the Pacific Northwest Bioconversion Policy Group, shall:

22.1 Continue the Pacific Northwest Regional Bioconversion Program as it is now described and funded by the U.S. Department of Energy.

23. Large Thermal Plants

Large thermal plants require from 10 to 15 years of lead time before they

can produce power. Partly for this reason and because of the related risks inherent in beginning a long-lead-time plant, the Council has not included large thermal plants in the twenty-year plan except in the medium-high and high growth forecasts in the late 1990's. Should the Council's conservation programs not achieve the expected penetration or should the Council's options concept prove not to be effective, the region may have to rely on large coal and nuclear plants in the future. To prepare the region for this possibility, Bonneville, in cooperation with regional utilities, must undertake studies of methods to decrease the construction time of large thermal plants.

Council Action

The Council will:

23.1 Conduct a study, in cooperation with Bonneville, the region's public and private utilities, EPRI, representatives from architectural and engineering firms, and equipment manufacturers, to determine

whether and how the planning and construction schedules of large thermal plants can be reduced.

24. Method for Determining Environmental Costs and Benefits

The Act requires that this plan include, "in such detail as the Council determines to be appropriate," a method for determining quantifiable (measurable) environmental costs and benefits. Those costs and benefits will then be used to determine the cost-effectiveness of various resources. Environmental costs and benefits that cannot be measured must be identified and given due consideration. The Council's method for determining quantifiable environmental costs and benefits is contained in Appendix C.

Bonneville Actions

Bonneville shall:

24.1 Prepare to implement the Council's method and be prepared to make full use of it for any contemplated resource acquisition.

24.2 Continue efforts to identify and create data bases and undertake

studies that contribute to a better understanding of environmental costs and benefits and the techniques which may be used to evaluate them. Efforts should be aimed at improving the utility of the method as a planning tool and as a tool for evaluating specific resources. The method and the results of any studies should be used to evaluate any resource Bonneville proposes to acquire.

25. Method for Calculating Surcharges

The Act requires the Council to provide a method in the plan which the Administrator shall use in imposing surcharges. The Council's method for calculating surcharges is presented in Appendix D.

The Council recommends surcharges for the following model conservation standards:

Model Standards for new residential buildings, Action 2;

Model Standards for new non-residential buildings, Action 3;

Model Standards for conversion to electric space heat in residential buildings, Action 6; and

Model Standards for conversion to electric space conditioning in

non-residential buildings, Action
7.

[10-23] Surcharges must be calculated in accordance with the method provided in Appendix D.

The conservation standards must be adopted and enforced by January 1, 1986. Thereafter, utilities will be expected to achieve the energy savings obtainable through these standards or to demonstrate, through adoption of other conservation measures (including rate design), that equivalent savings have been accomplished.

ADDITIONAL COUNCIL ACTIONS DURING THE
NEXT TWO YEARS

It is important that the Council be kept aware of how this plan is being implemented and how the region's energy future is unfolding. Without this process the Council would be unable to respond to changing conditions.

The Council has developed a program to monitor implementation of the plan and to evaluate the plan's continuing suitability for the region's energy future. With this information, the Council can take corrective actions quickly.

Significant improvements to the region's energy planning capability have been accomplished over the last two years through the use of models developed by the region's utilities and the Council. It is prudent for the Council to improve energy planning skills, methods, and models so that the Council's planning activities are of the highest possible quality. The Council has identified special studies, enhancements to existing models, and the development of newer, more comprehensive energy planning techniques centered around the growth forecasting model, the system analysis model, and the strategic planning model.

The Council will continue to seek active public involvement in all these activities.

During the next two years, Council activities will occur in the following areas:

26. Monitoring

A major objective of the Council in developing the plan was to deal effectively with the obvious uncertainties facing the region. As a result, the plan is much more than just a document to be placed on a shelf; it establishes a continuing and adaptive process. Therefore, a crucial Council function will be to monitor any changes in the conditions and assumptions on which the plan depends, and Bonneville's implementation of the plan. This is important for two reasons: (1) to ensure that Bonneville's actions reflect the intent of the plan; and (2) to ensure that implementation of the plan is

adaptive to changing circumstances and new information, while still adhering to the basic principles and objectives of the plan. A more detailed summary of the Council's program to monitor and evaluate progress is presented in Appendix A.

27. Demand Forecasting

27.1 Coordination of Load Forecasting Activities. The Council will continue to work toward a goal of coordinated demand forecasting activities, among Bonneville, PNUCC, the Council and other involved parties. There are significant opportunities for agreement on models, data, and basic assumptions, thereby eliminating unnecessary duplication of effort and achieving a common basis of understanding. The cooperative efforts in developing the demand models and forecasts for the plan were an excellent start toward this goal.

27.2 Economic Forecasting Model. The method by which forecasts of economic and demographic data are developed should be improved. The current model is not capable of capturing the complex interaction between industries within the region, between economic and population changes, and between regional and national economic changes. Bonneville has contracted to develop a regional economic model which would incorporate these interactions. The Council will monitor progress on model development so that this model can be used to develop Council forecasts in the future.

27.3 Industrial and Irrigation Forecasting Model. The Council will improve demand forecasting models in the irrigation and industrial forecasting sectors.

27.4 Demand Model Validation. An important area for the Council is the continued testing and evaluation of the demand models based on the latest demand data and conservation experience in the region. Such testing of the models will lead to the identification of areas where the models can be improved or the underlying data can be refined. In addition to models used for the plan, an alternative residential demand model will be evaluated which was developed by the Council.

27.5 Short-Term Forecasting. Although the Council's forecasting and planning activities are primarily concerned with the long-term forecasts, monitoring of the plan requires an understanding of short-term developments that affect the long-term forecasts used in the plan. The Council will become involved in the short-term forecasting activities of Bonneville, PNUCC, and others in the region and will intergrate those activities into the monitoring of the plan. If necessary, the Council will develop its own short-term analysis capability to supplement the available information and to ensure an adequate monitoring program. The Council's goal is to have maximum involvement of interested parties, and to ensure coordination of short-term forecasting activities in the region as they relate to the monitoring activity.

27.6 Residential Electricity Use Survey Data. Bonneville has been developing plans for a new survey of residential

use of electricity. This would be a follow-up on the survey that forms much of the data base for the Council's residential demand models. The Council has been participating actively in Bonneville's survey planning and expects to continue such consultation. New data, when available, will be used to update and refine the residential models and to reassess conservation actions that have taken place since the previous survey in 1979.

28. Conservation and Resources

28.1 Conservation and Resources Data Development. On a continuing basis, the Council will seek additional and better information related to all resources in the Council's data base. In the near future, this effort will concentrate on improving the quality of the Council's hydropower data.

[10-24] In FY84 and FY85, a broad effort will be made to improve the Council's data base. Attention will be focused on specific resources as required. Emerging technologies such as wind, solar, and geothermal will be closely monitored.

29. System Reliability and Rates

29.1 Decision Analysis Model. The concept of risk analysis is a key element in the Council's planning philosophy. Decisions on resource mix, value of shorter resource lead times, appropriate levels of resource options, and the timing of options and resource acquisitions are all affected by the complex interaction of uncertain variables. While the planning models used by the staff in

development of the plan are excellent tools for some purposes, they fall short in the area of risk analysis. This is due primarily to the inability of the model to adjust resource decisions internally as events unfold. The Council recognizes the need for, and will develop, a tool which provides the ability to rapidly examine the results of resource and option strategies applied during the planning period.

29.2 System Analysis Model Enhancement. While the system analysis model played an important role in development of the plan, it is still a very new tool and will continue to evolve to meet the needs of users. The Council expects to continue to play both an advisory and an active role in further model development.

30. Special Studies

During the process of developing this plan, the Council discussed in public meetings a series of issue papers and decision memos on specific issues of importance. This process has been particularly effective in stimulating public involvement in the Council's energy planning, and will continue throughout the next two years.

30.1 Conditions for Resource Acquisition Other than Hydropower. Appendix E of this plan lays out certain

provisions that Bonneville must adhere to when acquiring hydropower resources. These provisions are included to protect fish and wildlife from adverse impacts. During the next two years, the Council will conduct a study to evaluate criteria for the acquisition of thermal plants.

30.2 Billing Credits. Bonneville is developing a billing credits policy which will be released after this plan is adopted. The Council will analyze the policy for conformance to the plan. Based upon that analysis, the Council may recommend modifications of the policy. The Council will continue to monitor and evaluate applications for billing credits to determine their effect upon the plan.

30.3 WPPSS Schedule and Costs. The plan assumes that the WPPSS No. 1, 2 and 3 plants will be completed on schedule and within current budget estimates and will contribute a large amount of power to the region's power supply. Changes from those assumptions could alter considerably the region's energy picture and necessitate modifications to the Council's plan. The Council will closely monitor the construction schedules and costs of all WPPSS plants, so that the region has early warning of potential problems.

30.4 DSI Loads. Recent changes in the world aluminum market and in Bonneville rates to Direct Service Industries (DSIs) have raised the question of the outlook for continued production by the aluminum industry and other DSI customers in the region. Because DSIs account for a large segment of electrical loads and Bonneville revenues, it is important for the Council to keep abreast

of change in the outlook for their future. The Council will review studies prepared by Bonneville, consultants, the DSIs, and other interested parties.

30.5 Rate Design Studies. The Council plans on studying alternative rate designs further to determine the potential for increasing the conservation penetration rates and maintaining actual conservation savings. These studies will be done in consultation with state public utility commissions, Bonneville, and public and private utilities in the region.

30.6 Additional Hydropower Flexibility. Current practice limits hydropower system flexibility to the amount of fall and winter drawdown that can be carried by the one-year critical streamflow level. The Council will explore the circumstances under which additional drawdown might be economically feasible.

30.7 Interruptible Power Markets. In a preliminary finding, the Council estimated a potential interruptible industrial electric boiler market of 900 to 1400 megawatts. The primary focus on this market study was the forest products industry. Because of the high expected availability of non-firm energy during the spring runoff, potential for serving additional, interruptible Northwest industrial loads exists. An additional, more detailed, study will be done by the Council.

30.8 Reserves and Reliability Analysis. The Council will continue to study the operating reliability of the region's power system, placing emphasis on

the most cost-effective method of providing power system reserves. The Council will expand this analysis to include the peak energy needs of the system by using a new version of the system analysis model that simulates the hourly power requirements of the regional system.

31. Public Information and Involvement

The Council will continue its commitment to an active public involvement and information program. The Council believes that, for the plan to be implemented effectively, the public, state and federal agencies, Indian tribes, state and local governments, utilities, and other interested parties must be active participants. In addition, the Council will undertake consumer education programs on energy conservation and will develop a process for active public participation in revisions to the plan. These activities are further described in Appendix A.

Megawatts

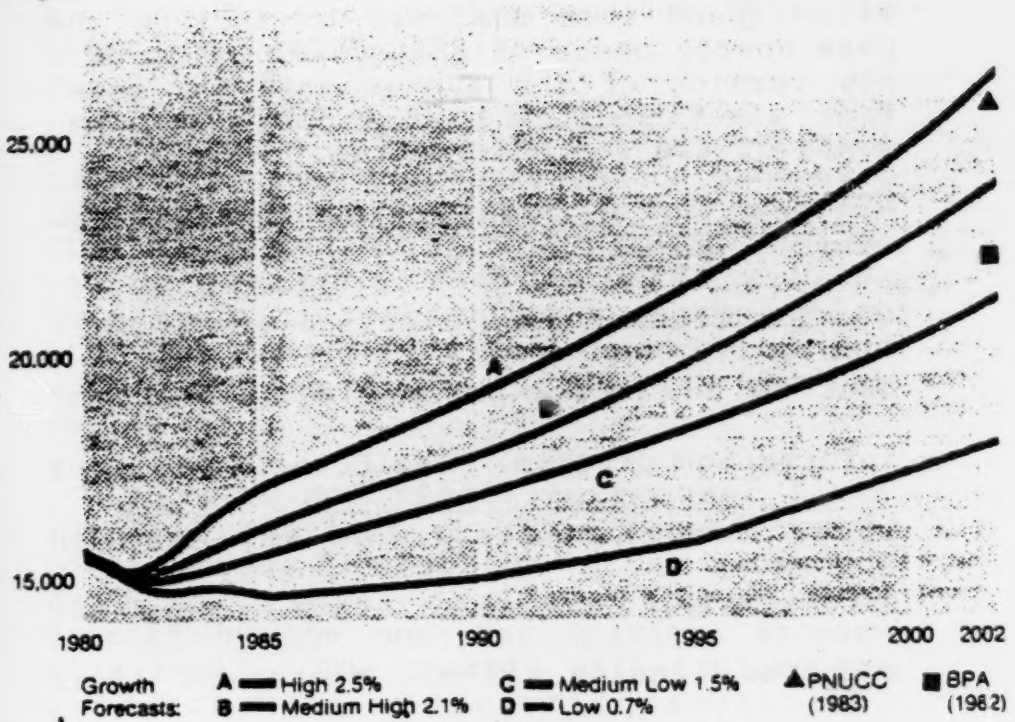


Figure 4-3.

Summary of Council's Demand Growth Forecasts

Table 4-1.

Forecast of Demand for Electricity and Price Projections

GROWTH FORECAST	DEMAND (Average Megawatts)		AVERAGE ANNUAL DEMAND GROWTH 1981-2002 (%)	INCREASE IN AVERAGE RETAIL PRICES ADJUSTED FOR INFLATION 1981-2002 (%)
	1981	2002		
High	15,524	26,245	2.5	80
Medium-High	15,524	23,797	2.1	50
Medium-Low	15,524	21,301	1.5	25
Low	15,524	17,834	0.7	5

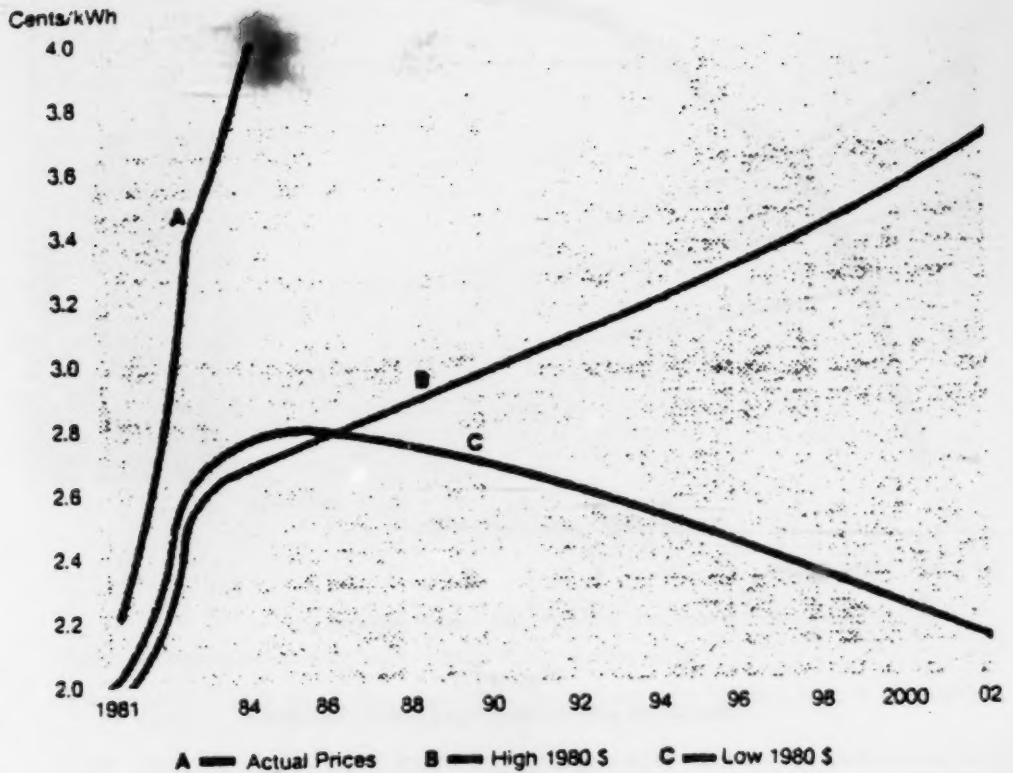
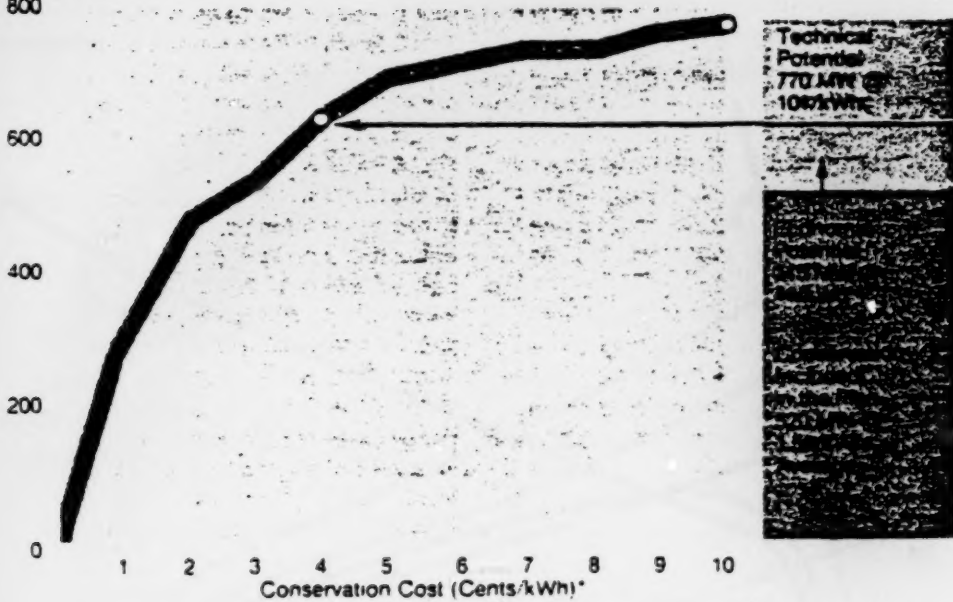


Figure 4-4.

Weighted Average Retail Prices, Adjusted for Inflation (1980 cents per kilowatt-hour)

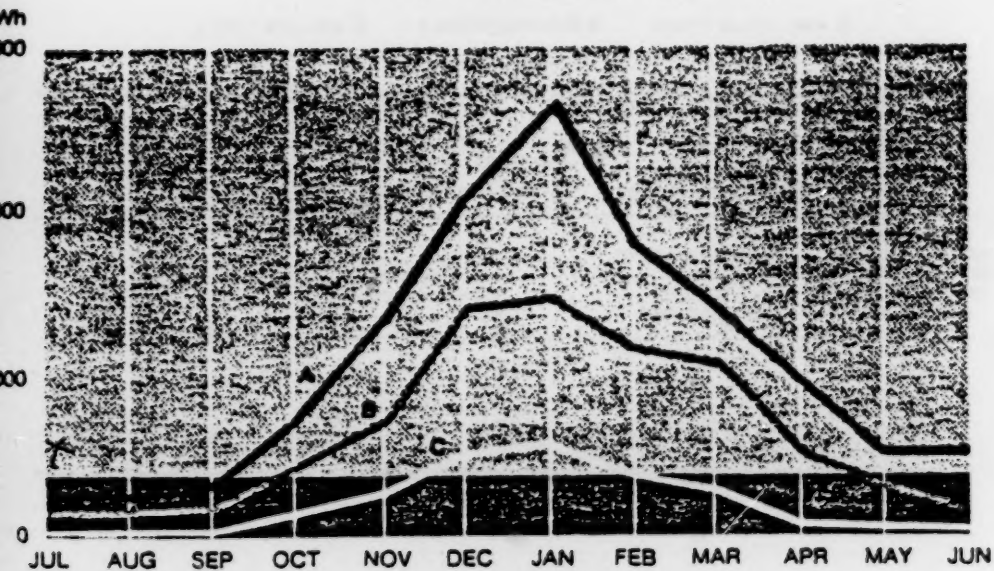
Average
Megawatts
800

*1980 Dollars

Potential not realized due to incomplete market penetration

Figure 7-1.

Residential Space Heating (Existing Houses)



A — Average use/month for typical house = 12,000 kWh/yr

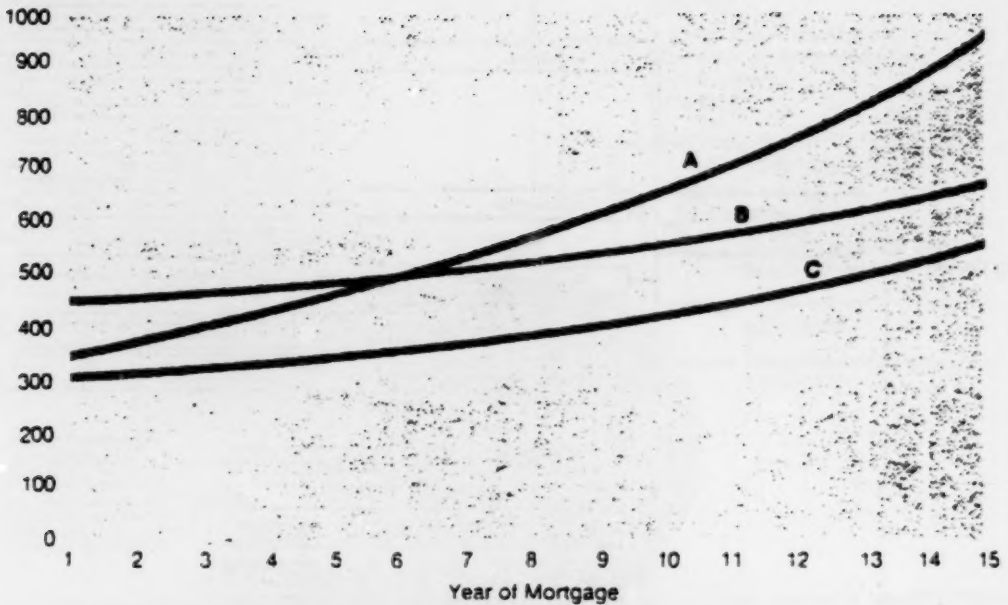
B - - New home built to current standards approximate use = 7,500 kWh/yr

C — Energy efficient new home approximate use = 3,000 kWh/yr

Average monthly use for water heating

Figure 7-2.

Average Monthly Space Heating Use

Annual Cost
For Heating

- A — Annual space heating bill for house built to current code.
- B — Annual space heating bill, plus added mortgage cost for house built to model standard, before tax deductions and heating system size reduction.
- C — Annual space heating bill, plus added mortgage cost for house built to model standard after tax deduction and heating system size reduction.

Figure 7-3.

**Annual Space Heating Cost for Houses Built to Current Code and Model Standard,
Climate Zone 1 (example: Portland/Seattle)**

NOTE: For houses built to current code, the annual cost shown is the consumer's electric bill for space heating. For houses built to the Council's standard, the annual cost shown is the consumer's electric bill for space heating, plus the increased mortgage payment needed to pay for the additional conservation measures installed in the house. In climate zones 2 and 3 a homeowner's combined payment (electricity plus mortgage) is less than his energy cost even before taxes and heating system cost savings are considered.

Two-Year
Action Plan
Target
(Megawatts)

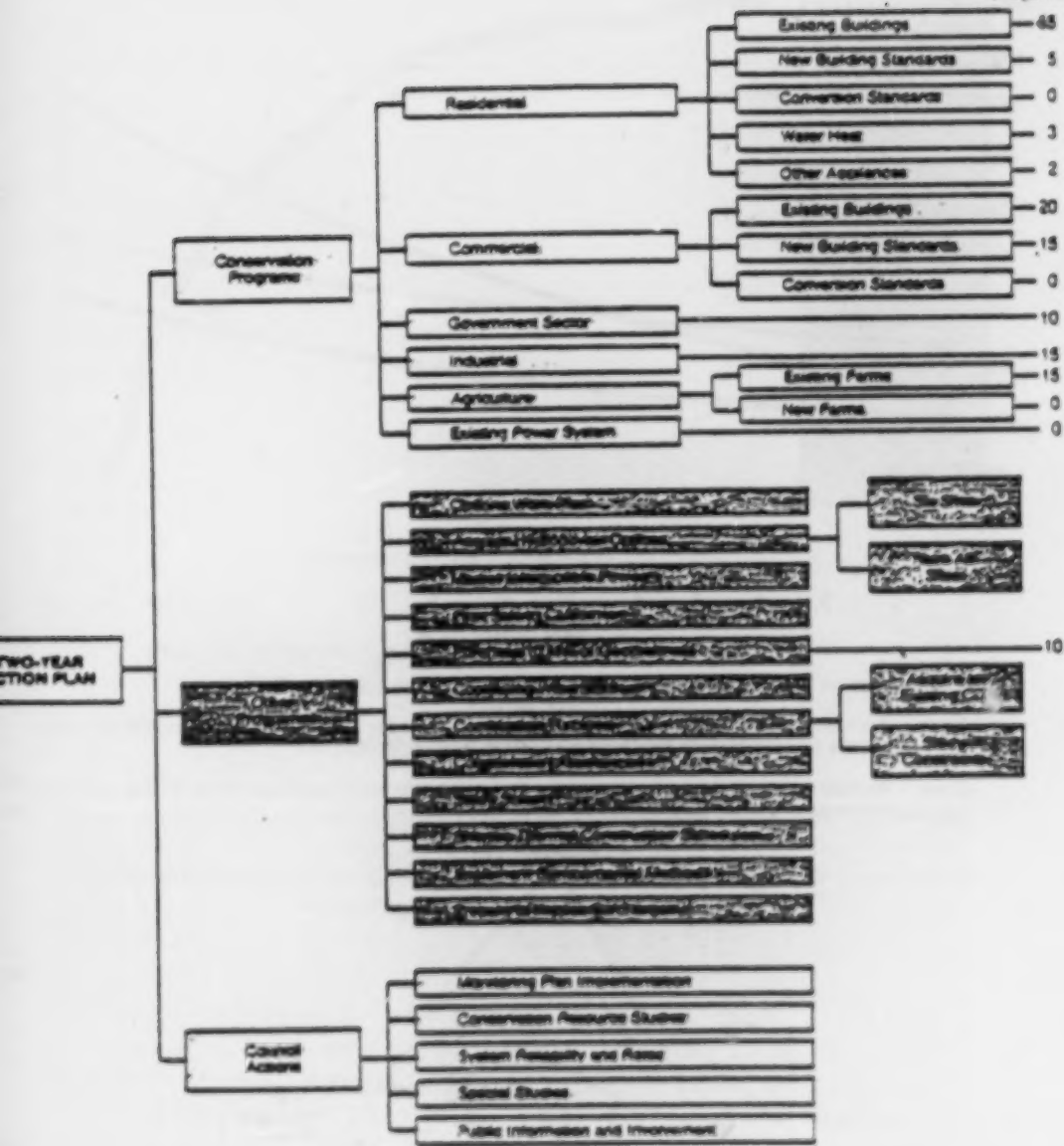


Figure 18-1.
Summary of Two-Year Actions

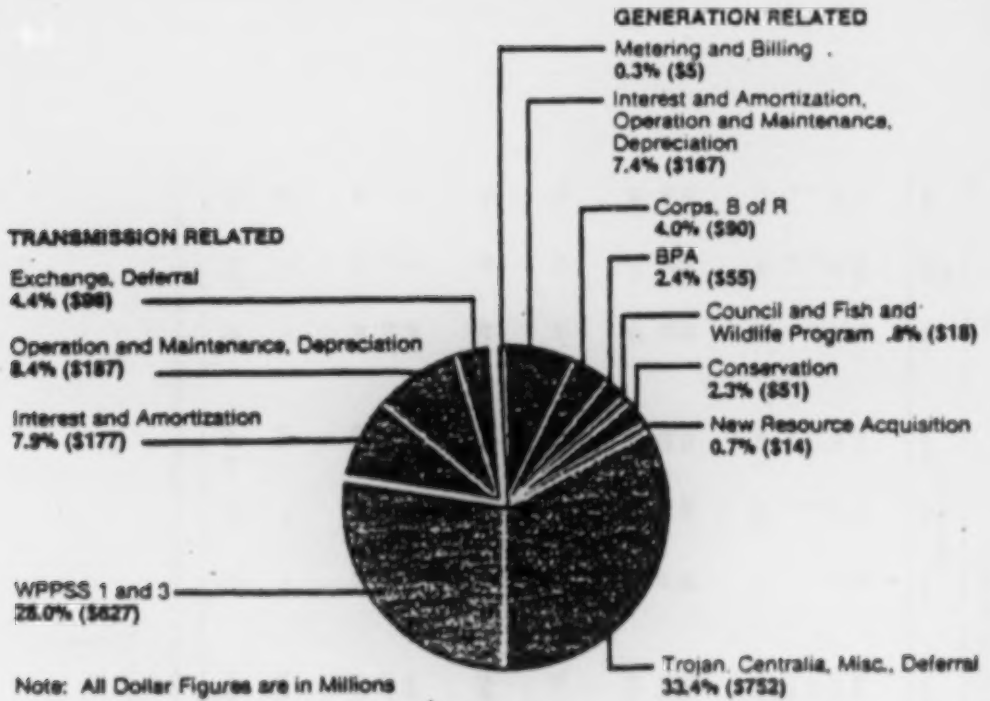


Figure 10-2.
Use of Bonneville Power Administration Revenues (FY 1983)

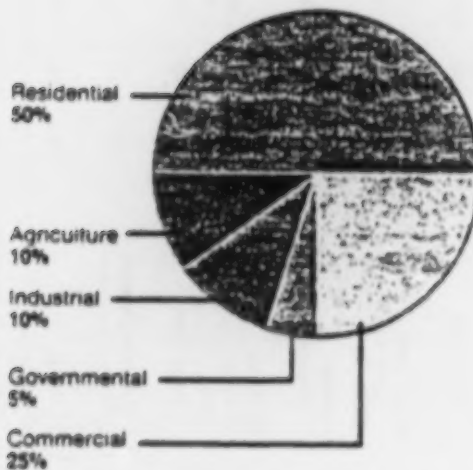


Figure 10-3.
Conservation Savings—High Forecast

Table 10-1.
Summary of Conservation Acquisition Plan by Forecast
(Average Megawatts, Excludes of Line Losses)

SECTOR/END USE	1985	HIGH 1985	2005	1985	MEDIUM HIGH 1985	2005	1985	MEDIUM LOW 1985	2005	1985	LOW 1985	2005
Residential												
Existing Space Heating	65	180	520	65	180	440	65	180	475	65	180	160
New Space Heating	5	75	865	5	35	505	5	25	305	5	10	125
Water Heating	3	5	510	3	5	420	3	5	200	3	5	5
Other Appliances	2	5	355	2	5	280	2	5	200	2	5	5
Sector Total	75	245	2,340	75	205	1,625	75	195	1,180	75	180	295
Commercial												
Existing Structures	20	90	720	20	90	630	20	90	605	20	90	90
New Structures	15	50	615	15	45	370	15	35	230	15	30	140
Sector Total	35	140	1,335	35	135	1,000	35	125	835	35	110	230
Governmental												
Sector Total	10	15	15*	10	15	15*	10	15	15*	10	15	15*
Industrial												
Sector Total	15	45	545	15	45	545	15	45	545	15	45	45
Agricultural												
Existing	15	25	300	15	25	300	15	25	300	15	25	25
New	0	0	85	0	0	85	0	0	85	0	0	0
Sector Total	15	25	385	15	25	385	15	25	385	15	25	25
Existing Power System Efficiency Improvements												
	"	"	270	"	"	270	"	"	270	"	"	40
TOTAL	150	480	4,760	150	425	3,840	150	415	3,230	150	365	650

*Twenty-year target will be revised based on Council's assessments of conservation potential in this sector scheduled for completion during the next two years.

*Two- and five-year targets have not been established for power system efficiency improvements.

